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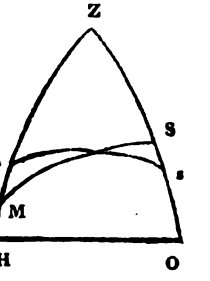
ART. 1.—*On the different modes of* REDUCING THE APPARENT DISTANCE BETWEEN THE MOON AND THE SUN, OR A STAR, IN LUNAR OBSERVATIONS, TO THE TRUE DISTANCE, FOR THE PURPOSE OF ASCERTAINING THE LONGITUDE. *By* THE *Honble.* MR. JUSTICE FLETCHER.

[Presented to the Society, 18th March, 1837.]

Having been engaged some years ago in observations of this kind, I was induced to make some attempts to shorten this process, to which I was naturally led by the very considerable prolixity of all the methods described in the Requisite Tables.

My mode of considering the matter was as follows:—

Let H O, in the marginal figure, represent an arc of the horizon, Z the zenith, M H the moon's apparent altitude, m H her true or corrected altitude, S O the star's apparent altitude, and s O its corrected altitude. Now, it is obvious, that as the azimuthal angle, between the objects MZS, remains unchanged by the correction of their altitudes, the apparent distance M. S. becomes changed by the corrections into m s, which is the true or corrected distance to be discovered.



Our data for this are as follows: We have, firstly, in the

triangle, M Z S, three sides, consisting of the apparent distance and the two apparent zenith distances given, to find the azimuthal angle at Z, and, having found, we have, also, in the triangle, m Z s, the two sides, m Z and s Z,] being the corrected zenith distances) and included angle at Z, to find the base m s, which is the true distance required. The direct mode therefore, of obtaining the true distance, is, of course, by the successive solution of the two triangles, M Z S and m Z s, and as this will not be found much more laborious than any of the methods described in the Requisite Tables, it is what I used generally to employ in preference to them, before I had the good fortune to hit upon shorter methods. To abridge and facilitate this solution, is, therefore, the object, both of myself and those who have devised the different modes of so doing (or rather, which are intended for that purpose) described in the Requisite Tables. Some of my methods are as follows:—

I.

1. Add together the two apparent altitudes and the apparent distance and take half their sum.

2. Take the difference between this half sum and each apparent altitude respectively.

3. Add together, the log. cosine of the moon's true altitude, the arithmetical complement of that of her apparent altitude, the log. sines of the before mentioned differences and the constant log., 0.30114, where the sun is taken, and 0.30115 where a star is taken, subtracting 30 from the Index and find the correspondent natural number.

4. Take the difference between the natural number and the natural cosine (to radius 1) of the difference of the true altitudes, and this difference will be the natural cosine of the true

distance, which will be less than 90°, if the beforementioned natural number is less than the last-mentioned cosine, and exceed 90° if it be greater.

II.

1. Substitute, for the first two logarithms, mentioned in the last rule, (viz. the log. cosine of the moon's true altitude, and the arithmetical complement of that of her apparent altitude) the log., in tab. ix., in the Requisite Tables, answering to the moon's altitude and horizontal parallax, and substitute, also, for the constant logarithm, 0.30114 or 0.30115, the constant log. 0.30103, and proceed, in all other respects, as directed in Rule I.

*** The above mentioned logarithm, from tab. ix., will be found sufficiently correct, in most cases being perfectly so, where the distance is taken from a star whose altitude is not less than 26°, and within 2 in the fifth place of decimals in every other assignable case. Where, however, mathematical accuracy is required, and the distance is taken from the sun, or a star under 26° high, the log., taken from table ix., may be diminished by the number answering to the sun or star's altitude in tables x. or xi. of the Requisite Tables.

III.

1. Add together, the log. cosine of the moon's true altitude, the arithmetical complement of that of her apparent altitude, and the log. sines of the differences between the apparent altitude of each luminary and the half sum of the true and appa-

rent distance (as directed in the First Rule, articles 1, 2, and 3,) and the constant log. 10.00012.*

2. From half the sum, subtract the log. sine of half the difference of the true altitudes, and the remainder is the log. tangent of an arc.

3. Subtract the log. sine of this arc from the beforementioned half sum, and the remainder is the log. sine of half the true distance required.

IV.

1. Take the sum or difference of the natural cosine of the difference between the apparent altitudes and the natural cosine of the apparent distance, accordingly as the latter is greater or less than 90°.

2. To the log. of this sum or difference add the log. cosine of the apparent altitude of the moon, the arithmetical complement of that of her apparent altitude, and the constant logarithm 0.00012, reject 10 from the index, and find the corresponding natural number.

3. The difference between this natural number and the natural cosine of the difference of the altitude is the natural cosine of the true distance, which is greater or less than 90° accordingly as this natural number is greater or less than the cosine of the difference of the true altitudes.

V.

1. Take the sum or difference of the natural cosine of the difference between the apparent altitudes, and the natural co-

* The same as is mentioned in Rule III., Art. 1., will be also obtained by adding to the resulting logarithm, found by Rule I., II., IV., or V., the constant log., 40.69897, and may be proceeded with accordingly.

sine of the apparent distance, accordingly as the latter is greater or less than 90°, as directed in the first precept of the last Rule.

2. To the common log. of this sum, or difference, add the log. from table ix., in the Requisite Tables, answering to the moon's altitude and horizontal parallax (corrected as stated in the note on Rule II., if thought necessary) subtract 10 from the Index and find the corresponding natural number.

3. The difference between this number and the natural cosine of the difference of the true altitudes is the natural cosine of the true distance, which will be greater or less than 90°, accordingly as this natural number is greater or less than the cosine of the difference of the true altitudes. I shall now proceed to work an example by each of these methods.

EXAMPLE.

(See Requisite Tables, p. 41 of their explanation and use at the end.)

Let the apparent altitude of the moon's centre be 12° 30′, that of a star 24° 48′, their apparent distance 51° 28′ 35″ and the moon's horizontal parallax 56′ 15″, required the true distance of their centres.

BY THE FIRST METHOD:

App. alt.	24° 48′	Moon's app. alt.	12° 30′
Reference	2′ 3″	Cor. Tab. viii.	50′ 42″
	24° 45′ 57″		13° 20′ 42″

Appt. Alt.	12° 30′	Moon's true altitude	13° 20′ 42″
Do. do.	24° 48′		24° 45′ 57″
Appt. dist.	51° 28′ 35″	diff. true alts.	11° 25′ 15″
	2)88° 46′ 35″	cos. 13° 20′ 42″	9.98811
	44° 23′ 17″	cos. 12° 30′	A C 0.01042
1st Diff.	31° 53′ 17′ S.	31° 53′ 17″	9.72285
2nd Diff.	19° 35′ 17″ S.	19° 35′ 17″	9.52537
			Const. Log. 0.30115
			Nat. Number 35310 = $\bar{1}$.54790
	Natural cosine	11° 25′ 15″	98020
	Diff. nat. cos.	51° 9′ 49″	62710

Which is the true distance required.

BY THE SECOND METHOD:

Log. Tab. IX, (answering to moon's alt. and H. P.)	9.99865
S. 31° 53′ 17″	9.72285
S. 19° 35′ 17″	9.52537
Constant Log	0.30103
	$\bar{1}$.54790

Which resulting log. being the same as that found above by the first method, and to be proceeded with in the same manner, will, of course, give the same result.

BY THE THIRD METHOD:

Cosine	13° 20′ 42″	= 9.98811
Cosine	12° 30′	= 0.01042
Sin.	31° 53′ 17″	= 9.72285
Sin.	19° 35′ 17″	= 9.52537
	Constant log.	= 10.00012
		2)39.24687
		19.62343
S. 5° 42′ 37″ (= ½ diff. true alts.)		= 8.99781
Remainder is Tangent.....	76° 0′ 39″	10.62562
Log. sine of this arc is.....		9.98815
½ sum Logs.—log. sine of arc = S	25° 34′ 55″	= 9.63528
	2	

So that the true distance is.....51° 9′ 50″

BY THE FOURTH METHOD:

Nat. cosine diff. app. alts.	12° 18″	= 97705
Do. appt. dist.....	51° 28′ 35″	= 62284
Difference.....		35421 = $\bar{1}$.54925
Cosine.....	13° 20′ 42″	= 9.98811
Cosine.....	12° 30′	= 0.01042
Constant Log.....		= 0.00012
		$\bar{1}$.54790

Which last log .being the same as that obtained by the First and Second Methods, and to be proceeded with in the same way, will, of course, give the same result.

BY THE FIFTH METHOD:

Diff. of nat. cosines of diff. app. alts. and apparent distance found as log. the last Rule..	35421 = $\bar{1}$.54925
Log. from Tab. IX. requisite Tables, answering to Moon's altitude and Hor. parallax.	9.99865
	$\bar{1}$, 54790

Which last log. being the same as that found above, by the 1st, 2nd, and 4th methods, and to be applied in the same way, will, of course, also, give the same result.

It will be perceived, that the preceding methods possess very considerable advantages. They are all capable of being made use of without the assistance of any other than common tables. Those, even consisting of only five decimal places, will, generally, if the proportional parts have been carefully taken, give the results true to the nearest second, and, always within 2″ or 3″, and, where those of six places are used, the error will never amount to 1″.

P. S. Since writing the above, I find the following methods also amongst some of my papers, which, as they give the true distance in a different way, by finding its log. cosine, I have thought it worth while to insert, although they are somewhat longer than some of the preceding ones.

VI.

1. Add together the log. sines of the apparent altitudes, and the sum, rejecting 10 in the Index, is the log. sine of an arc

2. Take the half sum and half difference of this arc and the complement of the apparent distance (see example at end).

3. Add together, the log. cosine of this half sum, the log. sine of this half difference, the log. cosine of moon's true alti-

tude, the arithmetical complement of that of her apparent altitude, and the constant log., 0.30114, where the distance has been taken from the sun, and, 0.30115, where the distance was taken from a star, and the sum, rejecting 20 in the Index, is the log. sine of an arc, which call A.

4. Add together, the log. sines of the true altitudes, and the sum, subtracting 10 from the Index, is the log. sine of another arc, which call B.

5. Add together, the log. sine of the half sum, and the log. cosine of the half difference of the arcs of A and B, and the constant log., 0.30103, and their sum, rejecting 10 from the Index, will be the log. cosine of the true distance.

VII.

Substitute, for the log. cosine of the moon's true altitude and the arithmetical complement of that of her apparent altitude, mentioned in the third article of the last Rule, the log. in table ix. of the Requisite Tables, answering to the moon's altitude and horizontal parallax (corrected, as mentioned in Rule II., if thought necessary) and substitute ,also, for the constant log. 0.30114 or 0.30115, the constant log., 0.30103, and proceed, in all respects, as in the last Rule.

VIII.

1. The half sum of the logs. mentioned in Rule III., Art. 1, rejecting 10 from the Index; or, the half sum of the resulting log., obtained by either of the Rules, I., IV., or V., and the constant log., 19.69897, is the log. sine of an arc, to be taken out of the tables. Or, the half sum of the first three logs., mentioned in Rule II., rejecting 5 from the Index.

2. The half sum of the log cosines of the sum and difference of this arc, and the half difference of the true altitudes, is the log. cosine of half the true distance.

*** The methods comprised in this last Rule are all variations of that which is called "Dunthorne's Improved," in the Requisite Tables, and are therefore, only inserted here to illustrate their analogy with the other methods, and the relation of these to each other.

The preceding example worked by the 6th Rule:

Moon's apparent altitude	12° 30′	S.	9.33534
Star's do	24° 48′	S.	9.62268
Sine of an Arc	5° 12′ 32″		8.95802
$\frac{\text{Complement distance + Arc}}{2}$	= 21° 51′ 58″	Cos.	9.96757
$\frac{\text{Complement distance — Arc}}{2}$	= 16° 39′ 26″	S.	9.45734
Moon's true altitude	13° 20′ 42″	Cos.	9.98811
Arithmetical Complement of Moon's appt. altitude			0.01043
Constant Logarithm			0.30115
Sine of Arc A 32° 1′ 56″			9.72460
Moon's true altitude	13° 20′ 42″	S.	9.36326
Star's do	24° 45′ 57″	S.	9.62212
Sine of Arc B	5° 32′ 55″		8.98538
Sum of A and B	37° 34′ 51″		
Difference of do	26° 29′ 1″		
½ Sum A and B	18° 47′ 25″	S.	9.50800
½ Difference A and B	13° 14′ 30″	Cos.	9.98830
Constant Logarithm			0.30103
True distance	51° 9′ 50″	Cos.	9.79733

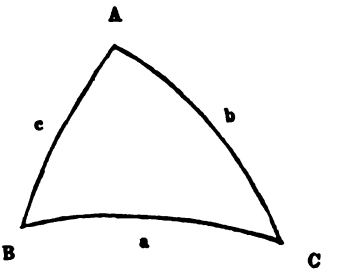
The same, worked by the 7th Rule:

½ Sum Comp. dist. and Arc.	= 21° 51′ 58″	Cos.	9.96757
½ Diff. do. do.	= 16° 39′ 26″	Sin.	9.45734
Log. Table IX., Requisite Tables, answering to Moon's altitude and horizontal parallax			9.99866
Constant Logarithm			0.30103
Sine of Arc A			9.72460

With which proceed as before

ART. 2.—INVESTIGATIONS OF THE RULES, CONTAINED IN JUDGE FLETCHER'S PAPER, "*On the different modes of reducing the apparent distance between the Moon and the Sun, or a Star, in Lunar Observations, to the true distance, for the purpose of ascertaining the Longitude.*" *By* VALENTINE DAINTRY, *Esq.*

Let A be the angle at the zenith; C, B the Moon and Star (or Sun); a, a′ the true and apparent distances between them; b, b′ the Moon's true and apparent altitudes; c, c′ those of the Sun or star:



RULE I.

We have $\text{Sin.}\frac{A}{2} = \sqrt{\frac{\text{sin. } (S-b') \text{ sin. } (S-c')}{\text{sin. } b' \text{ sin. } c'}}$: (S. T., Art. 24.)

Where $S = \frac{a' + b' + c'}{2}$.

$\text{Cos. } A = 1 - 2 \text{ sin}^2\frac{A}{2} = 1 - \frac{2 \text{ sin. } (S-b') \text{ sin. } (S-c')}{\text{sin. } b' \text{ sin. } c'}$

(P. T., Art. 43.)

$\text{Cos. } a = \text{sin. } b \text{ sin. } c \text{ cos. } A + \text{cos. } b \text{ cos. } c.$

(S. T., Art. 22.)

$$= \text{sin. b sin. c} + \text{cos. b cos. c} - \frac{2 \text{ sin. (S—b') sin. (S—c')}}{\text{sin. b' sin. c'.}} \text{ X sin. b sin. c}$$

$$= \text{cos. (b—c)} - \frac{2 \text{ sin. (S—b') sin. (S—c')}}{\text{sin. b' sin. c'}} \text{ X sin. b sin c.}$$

This is the quantity calculated by Rule I., with the additional factor, $\frac{\text{sin c}}{\text{sin. c'}}$ in its second number, of which the Rule makes no mention. The log. of this (log. sin. c—log. sin. c′) is so nearly a constant quantity = .00012 or .00013, that the author has deemed fit to neglect its variation; and augments the log. of 2, which enters the expression as a factor, by this small quantity. The parallax of the sum makes the slight difference between the constant numbers directed to be used, for the sun and star, respectively.

RULE II.

This is the same in principle as the last, the only difference being, that in place of the factor $\frac{\text{sin. b}}{\text{sin. b.}}$ its logarithm, ready calculated, in the Requisite Tables, is made use of. The quantity, .00012, added in the last Rule to the log. of 2, is here left out, as being included in the logarithms, in the tables referred to.

RULE III.

We have $1-2 \text{ sin.}^2 \frac{1}{2} a = \text{cos. a}$ (P. T., Art. 43)

$$\text{sin. } \tfrac{1}{2} a = \sqrt{\frac{1-\text{cos. a}}{2}}$$

$$= \text{Rule I.)} \quad \sqrt{\frac{1 \text{ cos. (b—c)} - \text{sin. S—b') sin. (S—'c)}}{2} - \frac{}{\text{sin. b. sin .c}} \text{ sin. b' sin. c'}}$$

$$= \sqrt{\underset{\text{(P. T., Art. 43.)}}{\text{sin}^2. \tfrac{1}{2} \text{(b—c)}} - \frac{\text{sin. (S—b') sin. (S—c')}}{\text{sin.. b' sin. c'}} \text{sin. b sin. c}}$$

In order to reduce this expression to a logarithmic form, a subsidiary angle P is first calculated by the formula,

$$\frac{\sqrt{\frac{\text{sin. b}}{\text{sin. b'}}\text{sin. (S—b') sin. (S—c')}}}{\text{sin. } \tfrac{1}{2}\text{ (b—c)}} = \text{tan. P}$$

To avoid the repetition of these lengthy expressions call this quantity $= \frac{M}{n} = \text{tan. P}$

Then sin. $P = \sqrt{\frac{\frac{m}{n}}{1 + \frac{m^2}{n^2}}} = \sqrt{\frac{m}{n^2 + m^2}}$

Divide m by this quantity and we get

$$\sqrt{n^2 + m^2}$$

and substituting their values for m and n we get

$$\sqrt{\text{Sin.}^2 \tfrac{1}{2}\text{ (b—c)} + \frac{\text{sin. b}}{\text{sin. b'}}\text{sin. (S—b') sin. (S—c')}}$$

the same expression as found above for sin. ½ a.

It will be seen that the operations here gone through, are the same as those directed by Rule III., as, also, that the same allowance for $\frac{\text{sin. c}}{\text{sin. c'}}$ is made as in Rule I.

RULE IV.

$$\text{Cos. (b'—c')—cos a'} = 2 \text{ sin.} \left(\frac{a' + b' - c'}{2}\right) \text{sin.} \left(\frac{c' + a' - b'}{2}\right) \quad \text{(P. T., 41.)}$$

$$= 2 \text{ sin. (S—c') sin. (S—b')}$$

The only difference between this Rule and the first, is, the substitution of the first for the last of these equivalents—.00012 representing as there the quantity $\frac{\text{sin. c}}{\text{sin. c}^0}$

RULE V.

Is the same as last, only, as in Rule II., making use of log. $\left(\frac{\text{sin. b}}{\text{sin. b'}}\right)$ ready calculated in the Requisite Tables.

RULE VI.

$$\text{Cos. A} = \frac{\text{cos. a}' - \text{cos. b}' \text{ cos. c}'}{\text{sin. b}' \text{ sin. c}'}$$

Find x from the equation,

$$\text{cos. b}' \text{ cos. c}' \quad \text{cos. } x' = \text{sin. } (90 - x)$$

$$\text{then cos. A} = \frac{\text{cos. a}' - \text{cos. } x}{\text{sin. b}' \text{ sin. c}'} = \frac{2 \text{ sin. } \frac{1}{2} (x + \text{a}') \text{ sin. } \frac{1}{2} (x - \text{a}')}{\text{sin. b}' \text{ sin. c}'}$$

$$= \frac{2 \text{ cos } \frac{1}{2} ((90 - \text{a}') + (90 - x)) \text{ X sin. } \frac{1}{2} ((90 - \text{a}') - (90 - x))}{\text{sin. b}' \text{ sin. c}'}$$

Now cos. a = cos. A sin. b sin. c + cos. b. cos. c. (S. T., 23.)

$$\text{cos. a} = \frac{2 \text{ cos. } \frac{1}{2} ((90 - \text{a}') + (90 - x)) \text{ X sin. } \frac{1}{2} ((90 - \text{a}') + (90 - x)) \text{ sin. b sin c}}{\text{sin. b}' \text{ sin. c}'}$$

$$+ \text{ cos. b cos. c}$$

Call the first term of this sin. A

" Second . . . . . sin. B

$$\text{then cos. a} = \text{sin A} + \text{sin. B}$$

$$= 2 \text{ sin.} \frac{\text{A} + \text{B}}{2} \text{ cos.} \frac{\text{A} - \text{B}}{2} \text{ (P. T., 41)}$$

RULE VII.

Same as Rule VI., using log. $\frac{\text{sin. b}}{\text{sin. b}'}$ from Requisite Tables.

RULE VIII.

$$\text{Let } \sqrt{\frac{\text{sin. } (S - \text{b}') \text{ sin. } (S - \text{c}') \text{ sin. b sin. c}}{\text{sin. b}' \text{ sin. c}'}} = \text{sin. P}$$

$$\text{By Rule III., sin. } \tfrac{1}{2} \text{ a} = \sqrt{\frac{1 - \text{cos. } (\text{b} - \text{c})}{2} - \text{sin}^2 \text{ P}}$$

$$\text{cos. } \tfrac{1}{2} \text{ a} = \sqrt{1 - \text{sin.}^2 \tfrac{1}{2} \text{ a}} = \sqrt{\tfrac{1}{2} + \text{sin.}^2 \text{ P} + \frac{\text{cos. } (\text{b} - \text{c})}{2}} =$$

$$\sqrt{\tfrac{1}{2} \text{ cos. } 2 \text{ P} + \tfrac{1}{2} \text{ cos. } (\text{b} - \text{c})} \text{ (P. T., 43.)}$$

Now, it may be easily ascertained, by comparison of the

preceding operations, that the three precepts, which form the first part of this Rule, all lead to the same value, viz.:—

$$\text{Sin. of an arc (P)} = \sqrt{\frac{\text{sin. (S—b')} \text{ sin. (S—c')} \text{ sin. b sin. c}}{\text{sin. b' sin. c'}}}$$

And by the second part of the rule,

$$\text{Cos. } \tfrac{1}{2} \text{ a} = \sqrt{\text{cos.} \left(\text{P} - \frac{\text{c}}{2} + \frac{\text{b}}{2}\right) \text{X cos.} \left(\text{P} + \frac{\text{c}}{2} - \frac{\text{b}}{2}\right)}$$

$$= \sqrt{\frac{\text{cos 2 P} + \text{cos. (b—c)}}{2}}$$: The result found above. (P. T., 38.)

N. B. References to the Articles of the "Elements of Plane and Spherical Trigonometry," in the "Library of Useful Knowledge." P.T., Plain Trigonometry S.T., Spherical Trigonometry.

The "Literary and Historical Society' has lately been called upon, to deplore the early death of the amiable and talented Author of the above "Investigations." Though young in years, he possessed intellectual attainments of a very high order, and, was distinguished by his devotion to scientific pursuits. Notwithstanding the claims of a public office upon his time, he, yet, found leisure for his favorite studies, and, for zealous and efficient endeavours, for the advancement of the Society, of which he was long an active Member. But, this unremitting devotion to Science, gradually undermined a naturally weak constitution, and laid the foundation of the disease under which he sunk, on the 19th September, 1842, at Petworth, in Sussex, whither he had lately gone to try the effect of his native air upon his shattered health.

ART. 3.—A FEW OBSERVATIONS, ON THE IMPORTANCE OF AIMING AT THE ESTABLISHMENT OF SOME GENERAL SYSTEM OF EDUCATION IN CANADA, AT THIS TIME, 1841. *By* DANIEL WILKIE, LL.D.

[Read, 20th February, 1841.]

To address a Literary Society, on the importance of education would be exceedingly out of place, and, indeed, altogether superfluous. The very fact of our existing Association, proves, that we are penetrated with a conviction of the momentous consequence of intellectual improvement. Yet, it is possible, we have not considered, in all its extent and magnitude, the importance of using our utmost efforts to extend the benefits of education among all who inhabit the same country and live under the same laws with ourselves. And, even, if we have fairly appreciated the vast importance of this subject, there may still be circumstances which render necessary a deeper and more intense consideration of it.

1. Among the circumstances that might render this necessary, may be reckoned, the very considerable length of time that must elapse, before institutions for education, even when in full operation, can produce their *natural* and appropriate effects. Education is commonly considered to commence about the age of five or six, and, in some shape or other, cannot well be longer delayed. It may be supposed to be concluded about the age of sixteen or eighteen. And, when it is recollected, that six, eight, or even ten years more, may gene-

rally pass before a young man studies his profession and establishes himself in the world; it may be fairly allowed, that a quarter of a century is not too large an allowance of time for the best and maturest systems of education fully to develope their effects.

This may, possibly, be one reason, why no progress has hitherto been made, in this country, on this all-important subject. Those who brought forward the question to public attention, about fifty years ago, probably expected, that they had, by their exertions, given a footing to the subject. They possibly believed that they had given it an introduction, and, that it would, henceforward, work its way. But, their hopes, if they were such, have turned out fallacious. Half a century has passed away, and no progress has been made. Dear-bought experience has taught us, that, unless some effective, and general co-operative system is adopted, and when adopted, persevered in; no real, no visible, no effectual improvement can be communicated to the public mind. The expectations of the benevolent will still continue to be disappointed. The only progress made, will continue to be brought about by private individuals, and the great sacrifices which intelligent parents are willing to make for obtaining such instruction for their children as a country so situated can afford.

2. Another circumstance, which renders our attention to this subject not a little necessary, is the mixed form of government under which it is our happiness to live. Those who live under despotic governments, seems to have little need of education at all. Indeed, the most prevalent opinion in this case, has been that the less education they have, the better. This, however, is a most fallacious opinion as far as individual happiness is concerned. But, as far as their co-operation with the

government is concerned, it is perfectly correct; their only duty to such a government, is to obey, and, their observance of it is not likely to be improved by any education they can receive. Under a republican government, on the other hand, some instruction is unquestionably requisite, to prepare the mind for the performance of the numerous civil offices, which in such circumstances, it falls to every one's turn to perform. Yet, the essential, pervading principle of such governments, that all men are equal, is easily learned, scarcely any instruction is necessary to impart it, in such situations, it springs up spontaneously, is learnt and understood without an effort. And, it may be observed, that, the overpowering reason which under such forms of government, urges men who love their country, to labour for the dissemination of knowledge, is to prevent the evils and confusion that so readily spring from the ebullitions of the uninstructed popular will. They regard education as a sanative principle: as a preventive of evils, which are inseparable from uninformed minds when endowed with power.

Under a mixed form of government, a higher degree of intellect is required than under a republican. The variety of civil offices which an individual has to perform, is equally great. To be fitted for the performance of these, requires an equal degree of knowledge. But, to appreciate its excellencies, to see the innumerable advantages which attend it; to learn its superiority as evinced by the experience of nations in the records of history, no inconsiderable expansion of mind is required. To study the complicated checks which one part of such a constitution has over another, demands no small enlargement of the reasoning powers. The convictions ensuing, do not, like that of the original equality of men, spring from

intuition. They require thought, inquiry, comparison. They require attention at the same time, to the experience of past ages,and to the present workings of the constitution itself. It is vain to expect, that men will feel persuaded of the superior advantages of such a government, unless the means of information are put within their power, and their minds furnished with some facilities in the use of them. Peculiar causes may, at times operate such a conviction, but, without the necessary instruction it is not natural to expect its prevalence, or to hope that it will be permanent. To provide instruction is an act of indispensable justice to that large class of persons whose views are usually of limited extent, whose pursuits in life are unfavorable to extended reflection. We can never be said to withhold from them the means of instruction, unless we forbid their inquiries; but to omit to afford them these means, is an indication of an egregious want of that spirit of benevolence which it is becoming in every man to entertain towards another.

The principle of self-preservation, essential to every government, not less than immediate duty to its subjects, requires it to provide for their instruction. Every government, founded on the public good, must possess, and put in practice, this self-preserving principle: for, otherwise, it must leave the happiness of its subjects a prey to every disturbing commotion. One of the most effectual means that a mixed government can employ for securing its own permanence, is, to provide institutions for general instruction. Thus, only, can a knowledge of its numerous advantages be obtained, and the consequent preference be felt by the public mind. Thus, alone, can that sympathy with its measures be secured, which will render its support cordial, universal, and undisputed. Till that sympathy is obtained, no government is secure.

3. An additional and rather pressing circumstance, on account of which it seems proper to bring the subject before this Society, is, the infinite importance of establishing a good system of education. Even, if we were all equally, and all well convinced of the importance of this subject, yet, the consideration of the best means of effectuating the object still remains to be taken into account. What are the most likely means of accomplishing the object, and, what is the course of instruction which it would be best to adopt? These are questions which naturally present themselves to the enquiries of an Institution such as we form. These are questions that might naturally be put to us by an administration busied with the subject, and, to which, for that, as well as for other reasons, we ought to endeavour to be prepared to return an answer. They are, also, questions to which it is natural to suppose, that we have all, individually, given some attention. If we can, by combining our views, bring forward something practicable and useful, we should only be fulfilling the just and reasonable expectations entertained of the Members of such an Institution.

It would far exceed the limits of these few brief remarks, to discuss the nature of the course of instruction which would be requisite in the present circumstances of the country. To do any justice to this inquiry, would require a lengthened investigation, on which it is impossible, at present, to enter. When such a discussion, however, may be undertaken, it will be necessary to take into account the whole extent of the subject. The inquiry must embrace elementary schools, for the benefit of all the inhabitants; academies, or schools of a higher order, for imparting the elements of a liberal or business education, and, one or more institutions, of the highest order, for imparting professional instruction, and training teachers for the inferior se mi-

naries. The proper organization of such a system of schools, on a graduated scale, would be a work of very extensive detail. The observations, now made, serve but very faintly to sketch the subject. It is hoped they may have the effect to induce Members of the Society, to direct their attention, more steadily than they have done, to a subject, which ought never to be forgotten, till it is once placed on a substantial and paramount basis.

4. There is only one other circumstance, which I would wish, at present, to press upon your attention; and, I do it, under the deepest impression of reverence for the gravity of the subject, and of deference for the different and interfering opinions entertained respecting it. If it is enquired, what is the cause which has so long delayed the establishment of a proper system of education, we can hardly fail to perceive, that the principal cause is the great diversity of opinions entertained on religious subjects. When, along with this great diversity, is conjoined, the great anxiety of each denomination to have the system of education so modelled, as to promote its own theological doctrines; then, the difficulty really becomes almost insurmountable. Had not this difficulty stood in the way it can hardly be doubted, that a general and efficient system of instruction, would have been, long ago, introduced. But, the contradictory demands of so many claimants, has, hitherto, defeated every scheme that has been proposed.

In making these observations, I hope, I shall not be supposed to speak with the slightest disrespect of any of the religious bodies existing among us. The error to which I allude is common to them all, not excepting that to which I have the happiness to belong. In order to overcome the difficulty, if it is ever to be overcome, we must view it in all its magnitude.

The objections, brought by the majority of clergymen, of all denominations, may be easily reduced to one general principle, which they all express in one general axiom. That axiom is this, "Every system of education must be based upon religion;" or, "Without religion there can be no education." Now, this axiom, as it stands, I, for one, am disposed to consider as incontrovertible. Religion, in one shape or other, must enter into the basis of every scheme of education. It would, indeed, be impossible, without some religious principle, to teach the most common mechanic art. If such an attempt is ever made some imperfect substitute, as that of honor, or some other, still more indefinable principle, must be adopted. Without dwelling, at present, on the inadequacy of such a substitute, let us grant, at once, the indubitable truth of the axiom, that "Religion must lie at the basis of all education."

Granting, then, the certainty of the axiom, let us see whether it decidedly leads to the conclusion, which the majority of the clergymen, of all religious denominations, have drawn from it. We cannot doubt the truth of the principle: but, it may be possible to question the use that is made of it, the conclusion which it is made to subserve. But, because, we grant the admission of general religious principles to be essential to every school; does it, therefore, follow, that every teacher of science or of languages, must mix up with his instructions the whole set of tenets held by the religious body to which he belongs? If this were really necessary, we might very fairly assert, that there never was such a school. Or, is instruction in the whole range of such tenets necessary or essential even in common schools? There is nothing in the general principle to establish the supposition, that such a concomitant is essential to the existence of these schools: nothing to prove, that it is essential to their useful and effective operation. That it would have been con-

venient, had it been possible, may be admitted. But, that it is inseparable from their existence, and, even of their utility, cannot, in any way, be established. The various denominations of Christians in this country, with a few exceptions, take an oath in the same form. It has never been surmised, that the varying and numerous tenets held by them have any tendency to diminish the solemnity of that obligation. The reason, indeed, is obvious. The solemn obligation of an oath is immediately founded on the Omiscience of the Diety, a principle essentially contained in the faith of all Christians. The same is the case with all the religious principles required for the regulation of a school. The Almighty Power, the ubiquity and other perfections of God, the obligation of truth, of justice, of kindness, of order, are the leading principles, that require continual enforcement in these juvenile institutions; and. they are maintained, without variation, by all Christians. The illustration of the peculiar doctrines of each several church, may be, very fairly, reserved to the institutions belonging to that church.

When M. Guizot was Minister of Education, in France, a very few years ago, I believe, only two or three, one of his directions to the teachers throughout the kingdom was to this effect: "Faith in Providence; holiness of life; submission to parental authority; respect for the laws of the Sovereign, and for the rights of all men: these are the sentiments which it is your duty to develope." Such was the system, on this subject, found necessary in France. Yet, the inhabitants of that country are not so much divided as we are. The same for bearance is, therefore, still more indispensable in our case.

These very few ideas, thrown out in this very brief manner, cannot be considered as doing any justice to the great importance of the subject. They may, perhaps, serve to introduce it

to our attention as it has never previously been before the Society. It may be hoped, that further and more general consideration of it may lead to some definite and useful conclusions.

Art. 4.—Notes, upon the Massasagua, a species of Rattlesnake. *By* Augustus Sewell, Esq.

[Read, 8th November, 1837.]

The reptile which is the subject of this short memoir, appears to me to be a variety of the rattlesnake, which has, hitherto, remained unnoticed, or, at least, undescribed by naturalists; a fact, which may be accounted for, from the circumstance of its rarely leaving the marshes, which are its native haunts, and being thus commonly seen only by those whose pursuits carry them into such places, and by few of whom it would be regarded with any degree of interest or attention. The creature is known only by its Indian name, "Massasagua." and, although, not uncommon in the Western States generally, yet, is infinitely more numerous in Michigan, than elsewhere, that country, from the number of marshes which overspread its surface, appearing peculiarly adapted for its abode. And, herein, the habits of this reptile differ essentially from those of the true rattlesnake (*crotalus horridus*), which is found only in dry sand or rocky localities, and, never, it is said, in the

vicinity of living water. There appear to be two varieties of the "Massasagua,"—one spotted on the back with brown spots or blotches, of irregular form, and the other spotted in a similar manner with black; the ground colour in both, being the same as the spots, but of a brighter hue. In the brown variety the colour of the belly is a pale brown, inclining to yellow: in the black species, the belly is of a blueish tinge. The black variety is quicker in its movements, and more irritable than the other, which appears to be of a sluggish disposition. A stick presented at the black one will cause it to dart upon the offender, while the brown one will take no notice of such feigned attacks. Both varieties appear to be equal in size, and the bite of both is equally dangerous. This snake is rarely found exceeding three feet in length. Its form is somewhat clumsy, being thick in proportion to its length. It is very numerous in the marshes of Michigan: so much so indeed, that the wild grass which grows there is commonly known as "Massasagua hay." When irritated, the reptile raises itself in a coil, elevating the head, and pointing the tail upwards, which vibrating rapidly to and fro, occasions that peculiar rattling sound which gives the traveller notice of the presence of a formidable foe. The bite of this snake is said to be generally fatal, unless remedies be promptly applied. Several cases have occurred, within my own knowledge, in which death ensued, within twenty-four hours after the infliction of the bite. The most common remedy for the bite of this dreaded reptile, is tobacco moistened with water or saliva, and bound over the wound, and which is said to be more efficacious than any other remedy in neutralizing the effects of the venom. Tobacco appears indeed, to be a mortal poison to the serpent tribe generally. The fangs of the "Massasagua," through

which the poison distils, are two in number, and are situated in the upper jaw, one on each side. When the reptile is in a quiescent state, these fangs lie backwards, and are only erected when the creature is excited. In making an attack, the snake darts forward, and snatching at the object of its aim, inflicts a small scratch, into which the venom flows. It is generally supposed, that for every year of the creature's existence, another joint is added to the *rattle*, which forms the extremity of the tail, but this appears to me to be an erroneous idea. I have killed small ones, whose rattles contained a greater number of joints than those of much larger size were furnished with. Still, it would appear, that the number of joints in the rattle bear some relation to the age of the reptile; for it is usually found, that the number of joints increase with the length of the snake. I once killed one that measured twelve inches in length, the rattle of which contained five joints, and I never heard on any being met with wholly destitute of the rattle. The probability is, that the joints of the rattle increase in number until the snake has attained its full growth, and as the size of individuals of the same age varies, so, it is probable, the number of joints in the rattle may also. These joints are rarely more than a dozen or fifteen in number, and this fact at once, disproves the hypothesis of the number of joints corresponding with the years of the creature's existence; for, as snakes are remarkable for longevity, individuals would not unfrequently be met with, furnished with a much greater number. The snake from which I took the rattles, now laid before the Society, was about three feet in length. At the approach of cold weather, this snake buries itself, in the marches, to a depth below the action of the frost.

ART. 5.—NOTES ON THE COAST OF LABRADOR. *By* MR. SAML. ROBERTSON, *of Sparr Point. Presented by* DR. MORRIN.

[Read, 16th. January, 1841.]

NAME OF THE COAST OF LABRADOR.

I shall not attempt to confute the claim of Cortereal and others, who are supposed to have given the name of *Labrador* to that tract of country lying between the St. Lawrence and Hudson's Bay, and shall merely give what I think is the true account, and which is supported by the universal tradition of the coast, viz.:—That one Labrador, a Basque whaler, from the Kingdom of Navarre in Spain, did penetrate through the straits of Bellisle, as far as Labrador Bay, some time about the middle of the Fifteenth Century; and, eventually, the whole coast took the name from that bay and harbour.

DISCOVERY.

Among the nations of Europe, from the Ninth to the Twelfth Century, the most remarkable for enterprise and maritime adventure were the Northmen, viz.: the inhabitants of Norway, Sweden and Denmark. These people not only f equented the coasts of the western nations of Europe, but also, penetrated into the Mediterranean, as far as the Archipelago, thus visiting

the three quarters of the world! It is further stated, that in the Tenth Century they had discovered and colonized Iceland, and shortly after Greenland; that continuing their discoveries, they finally had explored the coast of Labrador and Newfoundland, at least 400 years before the voyage of Columbus. The only difficulty in receiving this account as authentic is, that the discovery was not followed up, there is no succession of voyages or colonization to be met with. There has (as yet) no positive mark of Europeans been found on the Labrador or Newfoundland Coast of so early a date. It is true, there is no want of remains of buildings and tumuli of such ancient date, that tradition ascribes them to the Esquimeaux, which in one instance, at least, was false: this occurred three years ago, at Little Mecatina, in the cove called Esquimeaux Harbour, where a person had occasion to remove part of a *Terasse*, to make a garden. He found an iron instrument, of about eighteen inches in length, of a crooked form, which I conjecture to be a *Cerp*, such as were used 300 years ago in Spain—if my supposition is right, the remains must have been those of the Basques, as the Norman and Breton countries are not vine countries.

The Esquimeaux tradition, concerning the Norsemen, is clear enough:—That they were a gigantic race, of great strength—were very fierce, and delighted to kill people—that they, themselves, could not be killed by either dart or arrow, which rebounded from their breasts as from a rock. The Esquimaux suppose these giants still to exist, only very far north.

Captain Scoresby, in his "History of the Whale Fishery," says, that the Norsemen were the first that were engaged in the business, and that for several centuries, they alone followed it; that, during the Eleventh Century, they communicated their

knowledge of the art to the inhabitants of the shores of the Bay of Biscay, who, conjointly with the Norsemen, carried on the fishery until the middle of the Fourteenth Century, about which time occurred the great plague, called the Black Death. After this event, it appears,the Icelanders and Norsemen withdrew from the business; and during the Fifteenth and Sixteenth Centuries the Basques were the only whalers in Europe. Anderson, in his "History of Commerce," Says, that whalebone, for ladies' stays, became an article of commerce in the Fifteenth Century, and that the market was supplied by the Basques. The question now is, where did the Basques procure the bone? It is admitted, that the whales, frequenting the Bay of Biscay, were of the humpback, finner, and bottlenose species, which do not produce bone, and it seems pretty clear, that they either went to Greenland or the coast of Labrador for it. Of the Basques frequenting Greenland, for whales, we have no accounts, but of their visits to the Labrador there are abundant proofs.

First.—The tradition of the coast, which at all times, admitted that the Basques were the first discoverers, and that they had long frequented the coast before the French, (which last, we shall see, had fisheries before the year 1500). In all the early voyages, as of Cabot, &c., the Basques are always mentioned as met with; and the Basque vessel, found on the coast of Newfoundland, by Cabot, in his first voyage, is clear evidence of their prior acquaintance with the northern shores of America. I shall say nothing of the vocabulary of Basque names found throughout the Gulf Province, of which Quebec and Canada are not the least remarkable.

As to the claims of the French, although posterior to the Basques, they are yet anterior to the voyage of Cabot. It is

recorded, that when Cartier, in 1532, was commissioned to make discoveries in Canada, he made application for pilots, among the Bretons, who, it is said, had, for a long time, carried on the Baccalos fisheries, at the *Entrée du Golf* (that is at Brest). I do not know how many years may be meant for a long time; in this instance, however, I know, that it requires a *long time* to establish any fishery, because they are things not to be created by Acts of Parliament or Council. Putting the two long times together, I suppose forty years will not be thought to be too long? Thus, it would seem, the Bretons did carry on fisheries, on the coast, as early as the time of the first voyage of Columbus.

In the annals of the town of Dieppe, in France, there is authentic evidence to show, that the inhabitants of that town did carry on Baccalos fisheries, on the coast of Newfoundland, and before the year 1500.

Colonel Bouchette, in his Chronology, says, that one Jean Denys, of Harfleur, did in the year 1506, publish a chart of the Gulf and the adjoining shores. If it is true that Denys, or some one else, did publish such a map, at that time, it will follow, to any reflecting mind, that there must have been a considerable communication with this part of America, before the voyage of Cabot, considering there is not the least probability that any formal survey was taken, and that the state of society and science, at the time, did not admit of any rapid communications of ideas; and further, what could have incited private individuals to be groping among unknown coasts, and for what object? I say nothing of the Welsh claim of discovery; as I believe, that during the Twelfth, Thirteenth, Fourteenth, and Fifteenth Centuries, the northern shores, say the coasts of Labrador and Newfoundland, were occasionally visited

by the Icelanders, Irish, Welsh, Bretons and Basques; and further, during the last century, considerable fisheries were carried on there by the people bordering the Bay of Biscay; and the coasts, well known before the voyage of Columbus.

I think also, these coasts at early times, were often confounded with Iceland.

As to the Basque whalers, there is good reason to believe, that they had explored the Gulf, and part of the River St. Lawrence, before the year 1490.

I have offered these hints, not as established points, but as objects of discussion to the antiquary and historians of America, who may have access to manuscripts and other sources of information, which I have not; and I would observe, that some documents, connected with the whale and baccalos fisheries, may be found among the people inhabiting the shores of the Bay of Biscay, and also, among the western Irish and Welsh, which might throw light on the subject.

It may be objected to the above, that if America was known before the voyage of Columbus, how could it be kept a secret? Firstly,—There was nothing splendid in the Coasts of Labrador and Newfoundland, nothing to tempt avarice—a land of rocks and ice did not invite settlement—the only object of pursuit was eitheir fish or oil, and these could only be procured by labor. There was nothing to interest nobles and princes, who, with these principles were the only objects of history at that day. Secondly, whaling partook of the mystery attending every branch of industry, and which only the initiated were let into; this spirit of mystery was so common in those times, that the court of Spain thought to keep the discovery of Southern America a secret even fifty years after the voyage of Columbus; and were, says Hume, both surprised and alarmed to find

an English merchant ship in those seas. It was not the discovery of an unknown country that gave such eclat to the voyage of Columbus, but the supposed discovery of one already known, viz.: India—that region of romance, which in all ages has filled the imagination with golden visions.

ESTABLISHMENT OF BREST, NOW CALLED "BRADORE."

As I have already observed, that the Bretons had for a long time carried on the cod fishery here before the voyage of Cartier, it may not be far from the truth to say, that Brest was founded about 100 years before Quebec, or about 1508—at what time it assumed the appearance of a village, or when the French government first interfered I have not been able to ascertain; probably the government did not interfere before their attention was called, by the settlers themselves, who would naturally quarrel about limits, rights, &c. However, toward the end of the century, Lewis Roberts, in his "Dictionary of Commerce," printed in London in 1600, says:—"It was the chief town of New France; that it was the residence of the governor, almoner, and other public officers; that the French drew from them large quantities of baccalo, whale fins and train, together with castor and other valuable furs; and further, that the French had also a fort, at Tadoussac, solely to traffic with the Indians for furs."—A map of North America accompanies the work.

As to the truth of Lewis Roberts' remarks, there can be no doubt, as may be seen from the ruins and terraces of the buildings which were chiefly constituted of wood. I estimate, that at one time, it contained 200 houses, besides stores, &c., and, perhaps, 1,000 inhabitants in the winter, which would be trebled during the summer.

It may be asked, with reason, what could induce people to

settle in such an "out-of-the-way place" as the corner of the Straits of Belleisle, while so many other places, more accessible and equally good for the fishery, were left aside—it being subject to ice and fogs, currents, &c., to a far greater degree than any other part about the gulf. The resolution of this difficulty is easy enough. Firstly—When the Basque whalers, in the Fifteenth Century, first embarked in the pursuit of the *Balœna Mystacetus*, it is probable that they frequented that part now called the South West Ground, that is the outer edge of the ice from the Straits of Belleisle to the Straits of Hudson—this is accounted a very rough and dangerous fishing ground, and it probably was no better in former times; while there, they could not help observing, that the stream of whales came from the west; this would induce them to follow the line, in hopes of finding a smoother fishery, which would lead them into the Straits of Belleisle, and finally, one Labrador did advance to the Bay so called, and gave his name to the coast. Secondly—The east point of Bradore Bay was, and is yet, the rendezvous of every sort of fish and fowl that resort to the north during the summer; and it is, without dispute, to this day, the best fishing ground in the world for seals, cod, caplin, &c., and formerly for whales—an excellent harbour, or rather excellent harbours; and smooth shoal water were objects not to be misunderstood by any one. After the whalers had frequented the bay for some time, they were joined by the Bretons from Brest, who chiefly came for codfish. It must be borne in mind, that at the time I speak of, the coast was occupied by a warlike and powerful tribe of natives, who appear to have been hostile to the Europeans from the first, and continued their hostility while the country remained in the hands of the French. This alone, was sufficient cause for the first settlers to

concentrate for mutual defence, as no straggling establishment could be safe. About the year 1600 Brest was in its greatest prosperity; its first cause of decay was the grant *en seigneurie* of four leagues of coast, on each side embracing the town, to a certain nobleman, called Courtemanche, who had married a daughter of Henry IV, of France. This happened about the year 1630, and, much about the same time, the whole tribe of the Esquimaux, who had given the French so much annoyance, were totally extirpated or expelled from the Gulf shores. These two causes dispersed the fishermen to other stations, and the place had ceased to be a town, and indeed, was little more than a private establishment towards the close of the century, and the name changed to Bradore.

Nevertheless, while the French held the country it was the centre of considerable trade, as an old Frenchman named Jean Junot, used to say, that when he came first to the country, he saw 150 vessels rendezvoused in Bradore Bay, with five ships of war, preparatory to their departure for France, and that this was usually the case every year—this man spoke of the year 1720. This place remained in the hands of the family of the Courtemanche's for three generations, and then, came to the possession of one M. De Bouruac (Brouague? one of the Council of Seven in Quebec), who was either a nephew or grandson of the last Count De Courtemarche—he held it till the Conquest. After the Conquest, Bradore, and 150 miles of coast westward, were monopolised by a company, called the Labrador Company, established in Quebec, who for sixty years, carried on the fishery, chiefly for seals, with success, until the last fifteen years, when the fisheries failed, and finally, they were obliged to abandon and sell out—this happened in the year 1820, since when, this part of the coast has been gradually

filling in with settlers, who have augmented from a dozen individuals to more than 250. The produce of the fishery during the time of the Company did not average *L*2,000 per annum; latterly, it has augmented from *L*10,000 to *L* 15,000, and last year it exceeded *L*20,000.

PRESENT STATE OF THE COAST

I have observed above, that for the last ten years, there has been a considerable increase both in produce and settlers. There is now in the first, one hundred and fifty miles from the Province line, about fifty establishments more or less extensive chiefly sedentary seal fisheries; of these fifty, nearly half are in the neighbourhood of Bradore, which is only three miles from Blas Sablon (Blanc Sablon) river, the eastern extreme of the Province.

Indeed, for some years back, the fisheries have been so crowded thereabouts as to seriously annoy each other, and endless quarrels are going on. So far there has been no blood spilt, but, if government does not soon interfere and enforce some regulations, there is no saying what may happen in a country where the total absence of every mark of authority has bred a contempt for government and laws—where violence is the best title, and *audace* confers most right. To understand the matter, I shall describe what a seal fishery is:—

Seals are migratory animals, issuing out of the north, in the month of December, to winter in the Gulf and River St. Lawrence, and returning in June. While on their voyage, they generally congregate in shoals of thirty to one hundred, and, commonly touch on several parts of the coast in passing. When a seal fishery is to be established, houses and stores are built, fixtures erected; craft, with nets, hawsers, leads, an-

chors, &c., to be procured; these, with tools, utensils, and provisions, cost several hundred pounds, sometimes thousands. A solid frame of nets is fixed in a convenient place, into which the seals enter—get entangled amond the nets—drown, and are taken ashore in boats. This is the process of seal fishery, as practised in and above the Straits of Belleisle; now, if a very trifling net is placed before the aforsaid frame of nets, it will as effectually bar it off as a stone wall; if another frame is placed too near, it will, either partially or wholly, do the same. By this it will be seen, that all seal fisheries require a berth or limit.

The ancient French government decided, that this berth should be several leagues, which is much too great, and would, in a great degree, hinder the settlement of the Coast. Now-a-days, there are some who say, that a few yards is a sufficient berth; however, the old settlers do not choose to submit to these self-made legislators, and hence the cause of the quarrels I mentioned before, one wishing to retain the profits of his capital and industry, and the other insisting on a part of the harvest which he neither laboured for nor sowed. The foregoing remarks equally apply to the salmon fisheries in the rivers.

As to the recovery of debts and enforcement of contracts, it is not thought of, unless the parties of their own good will, choose to do it.

It does not become a private individual to propose a remedy for these, and other evils which press on the settlers of the coast; nevertheless, I shall with due deference, offer the following, which may be improved afterwards. As the inhabitants of the Magdalen Islands are much like those of the Labrador in many points, I think, a Colonial vessel, of 100 tons may be equipped and manned, with, say twenty men; a discreet person ap-

pointed as commander, and commissioned as Surrogate Judge, for the Labrador and Magdalens only; with power first, to decide regarding limits and berths for the fisheries. Second—To hold courts for the recovery of debts, to the amount of £50; with appeal to the King's Bench, in Quebec. Thirdly—To decide all disputes between masters and crews, as to duty, wages, &c.; and fourthly, with the assistance of a jury, to ascertain the amount of damages by interlopers, forcible entry and de tainer, which indeed, could only be estimated by a coast jury. Now, although a civilian may seem to be most fit for a judge, yet, the nature of the cases that would come before him, would be so similar to shipping and sea affairs, that I think, a retired naval officer would be a more competent and fitting person. It would be absurd to think of applying the *Coutume de Paris* to the Labrador—further, without sufficient physical force to enforce his decrees, any judge would be useless on the coast.

I shall, now, offer some observations on that part of the coast occupied by the Hudson Bay Company. First,—The King's Domain, properly so called, being leased to the highest bidder, by Government, for a certain term, ever since the year 1732. This district stretches from the parishes on the North Shore to Cape Cormorant, about 90 leagues, or 270 miles. The lessees, from the first have only occupied them selves with the Indian trade and two or three salmon fisheries. The number of establishments, in this tract are six, viz.: Tadoussac, Portneuf, Jérémie, River Godbout, Seven Isles, and River Moisie. The number of people employed, about twenty, who are servants of the Company, and occupied in trading with the Indians. The next tract, usually called the Mirgan Seigneurie, which, the occupiers say, extends from Cape Cormorant to a river named Oroman, about 80 leagues or 240

miles; (it appears from Bouchette, that the Seigneurie, originally, extended only to the River Goynish; this is 20 leagues shorter) however, as this *Seigneurie*, like all others, was granted under certain conditions, which if not fulfilled, the land should return to the King, as if never granted, it is as clearly the King's domain now as what is above it, because the *Seigneurs* have not only, *not fulfilled* their conditions, but have exerted every effort to prevent it; instead of conceding, and peopling the Seigneury, they strive, by threats and otherwise, to keep off all intruders, as they call British fishermen and coasters *who touch* on these inhospitable shores, and as the lessees of the Domain, have also generally, held the Mingan Lordship, the two have always been confounded together as if held under the same tenure. The number of establishments on this last tract, are four, viz.: Mingan, Napisippi, Natashquan, and Musquarow, employing about twenty men. Here we have upwards of 500 miles of coast in the path of the commerce of Quebec, comprising half of the sea coast of the Province and its chief harbours, locked up and held desert for the only object of enabling a few adventurers to cheat the miserable aborigines living on this tract, for it cannot be called trade where no competition is allowed. The former Government of Lower Canada has been, mainly, the cause of this state of things; and I believe, the history of the world will not furnish an example of so preposterous an act, for so base a purpose.

I suppose there is no difference of opinion, in the policy of having these 500 miles settled as soon as possible, and, as the lease will expire in a year or two, the Government may immediately have the tract surveyed and marked off in lots for location; taking care to retain the chief landing and watering-places in the harbours as public property. Some of the west

parts, I suppose, may be available for the purposes of agriculture, but, by far the greatest part being nothing but granite, can only be valuable as fishing stands,—I think, half-league lots will not be too large for land of that description. Some of the lots will be taken up immediately, and, in due time, every place where a boat can be secured will be settled. In a maritime point of view, were these parts settled, it would be highly beneficial to the commerce of the St. Lawrence, while, as a source of produce for export, it would add considerably to the trade and wealth of the Province.

ABORIGINAL INHABITANTS.

The Mountaineer Indians, inhabiting the coast, are a tribe of what M'Kenzie calls the Knistineau. It appears, that the chief part of the Indians, from the Gulf of Mexico to the Artic Ocean, and from the Atlantic to the Rocky Mountains, are so alike in manners, language and habits, that they may be pronounced one great division of the Malay race;—I say Malay, because the greater part of this great family of man are so called at present; whatever difference does exist among them, I think, may be sought for by the amalgamation with the Mogul race. When they have had much communication with the whites their manners are greatly modified, while in their original state they display astonishing similarity—their chief characteristic, everywhere, is cunning; next, insensibility to physical evils. Thirdly—They are very generally cannibals—few of the American tribes can be absolved of that charge, and among the Islanders of the South Sea and Indian Archipelago it seems still more common. In person, the Malay is much the same as the European, unless their having great mouths and strong teeth. I consider the Malay race to be one of the four great

families of man, and placed by Providence on the Continent of America; their progress has been therefore, west, and after peopling the South Sea Isles and Indian Archipelago, they have progressed as far as India. It appears, by the ruins of towns, lately discovered in Central America, that in times past, some tribes had made a degree of advance to civilisation; and as when men make temples and statues they can also build ships; this was probably the time of their emigrations; and it is a question, whether the Hindoo Mythology and Institutions, about which there has such a rout been made, were not the native products of this Continent, and carried to Asia by some tribes of Malays. To return to those inhabiting the Coast, their number, from the Saguenay downwards, is about 700 of all ages, and including those about Lake St. John, may amount to 1,000—I am afraid, however, that this estimate is too large. They are a very timid and inoffensive people, not but that they show occasionally some outbreaks of ferocity, particularly when intoxicated—their long subjection has debased and given them all the vices of slaves, liars, cheats, and drunkards. About 200 years ago they were, at least as warlike and enterprising as any tribe on this continent. At that time, they totally extirpated the Esquimaux, a very brave and numerous people who inhabited the Gulf shores. It is true thay had assistance from the French, yet it was mainly the Mountaineers that achieved it. At that time, it is probable, the Mountaineer Tribe was four times as numerous as now; they were the first of all the natives of America who had friendly communication with the Europeans, and the first that learnt the use of firearms. Long after the expulsion of the Esquimaux, they continued sending war parties to the North, and, Mr. Lloyd, of St. Paul's River, told me, that he knew an old Mountaineer, who related to him,

that in his youth, he had often formed one of these parties, and he used to describe the manner of their assaults on the Esquimaux encampments, which was so perfectly similar to the description of Mr. Hearne, in his expedition to the Coppermine River, that it is needless to mention it here, as it always ended in the total destruction of the whole, without respect to sex or age. These wars only ceased when the Mountaineers were converted to Christianity, by the Jesuits, about the year 1720.

In 1730, says Bouchette, the French government first devised the means of raising a revenue from these Indians, under the name of "Licences to Adventurers to trade within a certain limit;" these licences soon became leases for a term of years, and these lessees soon formed a system of subjecting the natives to certain rules for their own advantage. All monopolies have been found, when left to their own way, to become corrupt and oppressive—the monopoly of the Fur Trade has not been the least so. To show how heavy this bears on the Indians, we must first recollect, that the lessees pay to Government £1,200, per annum, which alone, operates as a poll tax of about two guineas a head on young and old; next, that lessees have a number of agents, clerks, voyageurs and servants, whose pay and subsistence amount to as much more; next, there are houses, stores, vessels, boats, &c., to be kept up, and it is to be supposed, those that take the lease expect to gain something by it, the whole of which must be drawn from the labor of the natives; it may be safely said, that they have been paying a capitation tax of five or six pounds, for more than a century! It is an indisputable truth, that if the professional traders were withdrawn to-day, the Indians would not be benefitted in the smallest degree, for some time at least, as their extreme ignorance, and habits of inebriety would lay them open to adventurers,

who would fleece them without any scruple—such is the tone current through the country, that an Indian is always looked on as lawful game. It may be expected, that I should offer some remarks regarding the measures to be adopted for their amelioration and improvement. My ideas on this subject are decided. First—All attempts to better the adults will be labor lost; if they improve at all, it will be by the example of settlers near them—the young only may be expected to repay the trouble and expense of cultivation. I have read, somewhere, that a Society was lately formed in London, for the Improvement of the Indians of Canada, and, that its efforts had been partially successful in Upper Canada. Now, if a school could be established at the Light-house, at Point des Monts, on the principles of the Society, to instruct the Indian youth of both sexes, teaching the boys English, with the use of the tools of coopers and boat-builders and joiners, with some lessons of gardening, and the girls the usual domestic arts of the sex, taking care that English should be the medium, for there are strong objections against French. After the trial made, and if successful, a second school may be erected about the Mingan Isles: by this means, it is my opinion, that considerable amelioration may be effected throughout the tribe: and Government may well pay the expenses, seeing the large revenue derived from the poor Indians for so long a time—it would be no more than retribution due.

ESQUIMAUX.

When the French first frequented the coast, it was in possession of the Esquimaux, up as far as the west end of Anticosti. It appears, that they had not been long in possession before the arrival of the Europeans, and that they had got it by

conquest. During the time they held the coast, it would seem, the Esquimaux country was the *Champ d'honneur* of all the tribes of Indians from New England and the Lakes to Hud son's Bay: Micmacs and Abinaquis, from Nova Scotia and Maine; Iroquois, from Lakes Champlain and Ontario; Algon quins and Nascapies, north of the St. Lawrence, all sent their war parties against the Esquimaux: as to their immediate neighbours, the Mountaineers, a continual war raged between them.

Notwithstanding all these enemies, the Esquimaux main tained their conquests with a strong hand; and it is probable, would have progressed farther south if the Europeans had not arrived.

No account of their number has come down to us; yet, from various items, it would appear to be seventy thousand. When De Monts first settled Port Royal in Nova Scotia, in 1605, he was surprised with the appearance of an Indian army, near his settlement, of four hundred men, who had just returned from an expedition against the Esquimaux. It would seem by this, that the parties who ventured into the Esqui maux country were numerous.

I take the Esquimaux to be a division of the Mogul family of Asia, who landed in the N. W. corner of America, advanced east, round the Artic Sea to Greenland, and then south to the River St. Lawrence, which seems to be their furthest progress on the east side. On the west-side of the continent, I am of opinion, that the chief part of the Indians, west of the Rocky Mountains, are of the Mogul race, or a mixture of them and of Malays: it is, also, probable, that the original Mexicans were a tribe of Moguls; how much further south have they advanced I have no means of knowing.

In person, the Esquimaux is short, about five feet four inches in height, compactly made; arms and legs short in proportion to the body; feet and hands small; chubby face, high cheek-bones, eyes prominent and far apart—in appearance, they are greatly inferior to the Malay tribes: they are however, much stronger, both in the arms and body, and more dexterous in their hands. They are distinguished for courage and probity: and in intellect seem also superior to Malay race.

It is singular that the French, who were so successful in bringing in the Indian tribes, could make nothing of the Esquimaux; they continued hostile from their first arrival, until the conquest of the country by the British, (about two hundred and fifty years) and annoyed them all the time. The first person who pacified and brought on the Esquimaux of Labrador, was one Cartwright, an Englishman, who was both a gentleman and a scholar, alike remarkable for his humanity and moral character: this gentleman established a fishing-stand, below Cape Charles, shortly after the peace of 1763, and gave a great part of his time in taming and instructing the natives: he first seized, by surprise two females on an island, and kept them under his eye for several months, teaching them English, and learning from them the Esquimaux language: in the fall, he carried them to England, introduced them into company, and even at Court, where they were graciously received, by Queen Charlotte, who gave them many presents, some of which are yet on the coast. The following spring, Mr. Cartwright carried his pupils back to Labrador, and through their means, soon made the Esquimaux understand, that he was not French, and that he was their friend: he reaped the reward of his philanthropy in a little time; in less than four years, all the Esquimaux, for six hundred miles around, came in, on the most

friendly terms, and looked up to him as a being of a superior order. Since that time the Esquimaux have troubled no one. About the Moravian settlements they are generally very pious Christians, and those scattered west are at least, nominal ones; the whole are Protestants. About fifty individuals of the tribe live in the Province; they have adopted the English manners, clothing and language; and live exactly the same as the other inhabitants of the coast.

I suppose it would interest no one, to relate the many sanguinary encounters in which the Esquimaux have been the victims or the actors. I have said, that they maintained their conquest along the Gulf Shore until about the year 1600, when the Mountaineers, having received firearms from the French, and learned the use of them, this soon turned the scale, as it does everywhere else, and the Esquimaux were forced to give ground, retiring downward to the Straits, and concentrating themselves on Esquimaux Island, about one mile from the house of the late Mr. N. Lloyd, of St. Paul's. Here they fortified themselves in a camp, with walls composed of stone and turf, with a ditch outside, in circuit more than half a mile; which remains almost entire to this day. In this fort they maintained themselves till about the year 1640, when they were assaulted by the Mountaineers aided by the French, and either totally extirpated or expelled; the few that escaped retiring to the north outside of the Strait of Belleisle. In this assault, it is said, more than 1,000 were slain, and by the quantity of human bones scattered over the Island, I should think the number was not overrated. After their expulsion from the Gulf Shores, they occasionally made predatory excursions against the French—coming into the Straits, early in the Spring, in skin-boats—burning fishing booms, boats, &c., killing the guardians or making them

fly. Twice they assaulted Bradore during the times of the Courtemanches; in one of which they lost four hundred men: indeed, they continued this warfare until three years before the conquest; when, after destroying several fishing stands, along the Straits, they were repulsed by some sealing crews, at Pennoyer River.

GEOLOGY.

If we take the Coast of Labrador as a whole, it may be pronounced a block of granite; except a space along the Straits of Belleisle, from Bradore to Château Bay, composed of sandstone, and about fifty miles near the Mingan Islands, which is limestone: the rest is altogether granite of every variety. There are several sand flats, which seem to be accumulation from the discharge of rivers; with a few trifling deposits of clay in certain places.

ZOOLOGY.

There are no land animals here that are not common to Canada, and their habits are well known. However, there are two belonging to the sea, which I have not seen described; these are the Great River Whale, a variety of the Balæna mysticetus, and the Harp Seal.

Balæna mysticetus. There are several varieties of this animal. First,—The River Whale, which seems to be found only in the St. Lawrence and the vicinity. Second—The Greenland Whale.* Third—The North Cape or Brazil Whale; and fourth—the White Whale,† the smallest of all, and found far north. The river whale, so called by the Ameri-

* This appears to the true Balæna mysticetus.—(Linn.)
† Beluga borealis.—(Lesson.)

can fishermen, is the largest of all the varieties: in length they attain from sixty to seventy feet, and as they are much more lumpy than other kind, yield the greatest quantity of bone and oil: some have been killed at Bradore, which made nearly three hundred barrels, or nine thousand six hundred gallons of oil, and thirty-seven cwt. of bone. Captain Scoresby says, that the largest of all whales is the Sulphur, or as he calls it, the Razor-back, which attains the length of one hundred feet or upwards; but I question, notwithstanding, if the Sulphur contains so many cubic feet as the river whale. In colour they are mottled gray; the belly and under the tail, milk white. Of all sorts of whales they are the most timid and easiest killed when struck. They live chiefly in the entrance of the St. Lawrence from December until June, when they pass through the Straits of Belleisle, and frequent the southwest ground for the summer, returning by the straits in November. It is said that they have little or no hearing: yet, I have observed, that they have a sense that seems equally acute, for the slightest disturbance in the water, even at a considerable distance, is felt by them instantaneously. Formerly, these animals were extremely numerous, and the quantity destroyed by the Basques and French must have been very great, as the shores of the straits are lined with their enormous bones.

After the conquest, the colonists of New England entered the trade, which employed forty vessels, usually getting their cargoes: this trade continued to the Revolutionary war. After Jay's Treaty, the Americans again began the fishery,: but about the same time, the English whalers, from Hull and other English ports, began to frequent the southwest ground, and such was the destruction made by them, that in less than twenty years, they nearly extirpated the whole species. For the last

twenty years it is a rare thing to see one killed, and I question now, if there are fifty individuals remaining of the variety called the river whale.

The *Harp Seal.** This variety of seal is found from the River St. Lawrence to the Artic Ocean, Greenland and east to Nova Zembla: in size, they attain the length of seven feet, and four feet in girth. When young they have, for forty-two days, soft, whiteish, yellow hair; afterwards they become mottled, black, and light blue, and after they have attained their full growth, which is three years, th ir heads are black, and have two black bars from the shoulders to the rump: the rest of the body is white. They are very numerous, forming the chief subsistence of the Greenlanders and Esquimaux, and are caught in considerable quantities, in nets, along the Coast of Labrador and Newfoundland: they are also killed in vast number, on the drift ice, by vessels fitted out from St. John's and other parts of Newfoundland, and elsewhere. They are wandering animals, always in motion, going north in summer, and frequenting the Gulf and Banks of Newfoundland in winter. Although they may be called carnivorous, they are extremely abstemious: it is rare to catch them with any sort of meat in their stomachs; rest alone seems sufficient to fatten them. In February and March, the females having selected a part of the drift ice, which consists of strong flat pans, get on it and drop their young, which is generally one each, (sometimes, however, they have two, and even three at a birth): the mothers immediately leave their young and never come near them afterwards; in some rare instances, it has been known, that the old ones did suckle their young for a day or so, but generally they leave them immediately. When pupped, they

* Phoca Greenlandica.

are about the size of a house cat, and weigh from fifteen to twenty pounds. For forty two days they lie on the ice, with very little motion, without food of any kind, or drink, during which time they increase four times their weight and bulk; weighing, when ready to cast off their white hair, about seventy pounds—are extremely fat, and produce, on an average, four gallons of oil each. As soon as their white hair falls off they seek the water, where. in a few days, they become very lean. Here we have a deviation from the ordinary laws of nature, which, I think, is one of the strongest proofs of contrivance and design that I am acquainted with. These animals were created by Providence to live among the drift ice; and as this ice is subject to be suddenly jammed or packed together, without any means of penetrating through it, and often, when in this state, it freezes into a solid sheet—if the Harp Seal were like any other animal, he would infallibly starve to death; instead of which he suffers no inconvenience. I have heard of serpents and tortoises living long without food, but not of their increasing in size and weight. Some, I am aware, may think this account of the Harp Seal to be paradoxical: there are few who will be more incredulous on this point than I was myself, until I had an ocular demonstration sufficient to convince any sceptic. The case was as follows: about six years ago, in the beginning of March, the wind being south, a considerable pack of drift ice was jammed against the shore opposite my house; after a time, the wind ceased, and several square leagues of drift ice adhered to the coast: the drift ice was composed of pans or sheets of ice from half an acre to twenty acres in superficies; among these pans was a great quantity of broken ice and snow, which, by pressure, had been thrown up and heaped round each pan, forming ridges of ten, twenty, or even

thirty feet high; the pressure from outside had lasted long enough to freeze the whole into one solid mass; as to the pans themselves, they were ten feet thick, and as solid as plate-glass —there was neither crack, fissure, or hole on the entire surface; upon the pans were many hundreds of young seals, just pupped, —here we left them until the 5th April, when we brought off what we could. At first sight, it was clear no communication could exist from underneath, and as the ridges were twenty feet high, no seal (little fitted for such an exploit) could get over them. I had clear evidence of the growth of the seals during the time; for while the ice was jamming, several young seals had been killed by pieces of ice rolling down from the ridges and crushing them to death; they were at hand to compare them with the living ones. I examined the stomachs of several, and found no signs of their having tasted food; being just in the same state as others taken out of the mother before being pupped.

It will not be expected that I should vouch for the exactitude of the dates in the foregoing notes; I had to reconcile them from very contradictory data in the best way I could. I might also have made some observations on the cod fishery; but they would embrace questions of foreign policy and maritime power things that I know very little about, and have less to do with.

THE PHILOSOPHY OF ICEBERGS.

Various theories have been invented and published regarding the formation of those immense blocks of ice found floating in the Northern Ocean and Banks of Newfoundland. Some have fancied, that they were formed under high cliffs, over which brooks of fresh water ran down; that the fresh water would freeze in falling and accumulate in large masses, adhering to

the cliff, until their weight became so great that a disruption would take place, and the block tumble into the sea. It is pretty clear, that he who invented this theory had never seen an iceberg; for, first, water falling in any quantity will quickly bore a hole through any mass of ice, and once bored, there will be no further accumulation. Secondly—I know of brooks running down cliffs, which after coating the cliff a few feet with ice, the water always makes a passage between it and the rock. Others have imagined that great banks of snow were drifted against certain capes; where after the accumulation of several years it would consolidate into ice, and finally roll off into the water. These theories appear to be founded on the supposition that all icebergs are formed of fresh water. It is true I have never seen the formation of an iceberg from first to last; nevertheless, I have observed a part of the proceeding, which by being continued would infallibly produce the final result. Along the shores of the Northern Ocean, when winter sets in, northwest winds become frequent, and last from three to six days: they begin by blowing very strongly, but towards the last they become moderate and even calm: when the cold weather has continued for some time, the water of the sea becomes, two, three, or more degrees below the freezing point: this is the time to make ice: on the first calm the whole sea for several leagues off shore freezes in a sheet of from six inches to a foot in thickness, according to the duration of the calm. After a calm, a south east wind usually follows, generally very strong and accompanied with snow; immediately the whole sheet cracks, doubles, pieces sliding under and over each other with considerable violence, until the whole is condensed into a space of about half a mile along the shore, and from ten to twenty feet thick, according to the pressure from outside. The broken ice

so heaped together, is loose at first, but in a little time it consolidates, although under water. Many peop e think that nothing can freeze under water but it is a mistake, at least as regards salt water When the wind changes the ice separates into pieces of moderate size, and form the usual drift ice of the ocean If these pieces are driven off any distance and cold windy weathe ensues, the waves beat against them making the spray fly over at every surge, which keeps freezing on the upper surface: the fresh water only congealing while the brine keeps d awing off. In this manner the piece augments in size, until the upper parts gets top-heavy, when it rolls over, the lower part becoming uppermost. The spray keeps still freezing and the piece of ice keeps rolling over and augmenting each sucessive storm while the cold weather lasts. It does not require such a length of time to form a large accumulation of ice as is generally supposed: as the piece encreases in size, the process is accelerated, in consequence of the larger surface, and the greater degree of cold in the larger bu k of ice. I have said, that only the fresh part of the sea water freezes. This is true with respect to ice made from spray, and where the saline part has an opportunity of drawing off: but when the weather is very cold, the whole, salt and fresh, congeals; the brine being enclosed in the pores of the ice: however, on the first thaw, the brine oozes out. I have often thought, that advantage might be taken of this circumstance to make salt to any amount a-'long the gulf shores; the frost doing the chief part of the business.

Icebergs are of a blueish colour, opaque and porous; generally steep, in some places forming cliffs of no inconsiderable height. The cause of this is that the motion of the sea in the water-line keeps cutting through them horizontally until a piece overhangs, which either breaks off by its own weight or by a

stroke of the sea; the lower part, still adhering to the mass, forms spurs to a considerable distance under water, which are very dangerous to ships.

Salt-water ice is easily known from fresh; they differ as much as statuary marble does from crystal: all ice floating about the sea in the months of June and July will be found to be fresh.

As to the circumstance of ice forming under water, it is attended with variations, the reason of which I have not been able to discover: most years it does not happen; indeed, I do not recollect that it has occurred more than three times during the last five and twenty years. I do not mean drift ice, for that freezes every year; I mean other substances, as nets, cordage, leads, &c. I have seen a net, sixty feet deep, every mesh incased with ice like a rushlight; hawsers, chains, and other larger matters, with a proportionably greater crust. When this happens, if the net is not taken up immediately it is lost; for it soon floats like cork—although ever so heavily sunk—and then forms a solid block of ice. I have known the bottom at a depth of sixty or seventy feet frozen, and resembling a limestone flat; and all the anchors of a seal fishery, whose flukes were fixed in the sand so firmly that no purchase could draw them out. I have seen, on another occasion, when the fluke of an anchor was only partially buried, when drawn out, the palm brought up a piece of frozen sand, as angular as a stone, and nearly as hard as a piece of Bristol sandstone.

It does not seem that the cold alone is the cause of what I have stated, as in seasons equally cold, or apparently colder, no such freezing is observed. I am unable to give a solution of this difficulty; all I know is that so it occasionally happens.

ART. 6.—SOME OBSERVATIONS ON THE MENOBRANCHUS LATERALIS; *described and figured By Dr.* HARLAN, *in the Transactions of the Lyceum of Natural History of New York. By the Honble.* WILLIAM SHEPPARD. *of Woodfield, Men. Geo. Soc. France, Cor. Mem. Nat. Hist. Montreal.*

[Read, 6th February, 1841.]

This animal is an inhabitant of the waters of the St. Lawrence, being sometimes found at low-tide among the rocks at the margin of the river, particularly in the spring and autumn, when waters are cold.

In the fall of 1839, my son took three of these reptiles in front of Woodfield; one of them measuring eight inches long, the other two about six. They were kept all winter in an earthenware tub placed in the greenhouse, the temperature being generally about fifty degree of Fahrenheit in the day, and forty degrees at night. They ate nothing all winter, although food was frequently offered them. The animals generally remained at the bottom of the tub, unless disturbed by the curiosity of spectators,when they would swim about with great agility, using their tail in a manner of fishes: sometimes (although but seldom) they would crawl on the bottom of the vessel; but this they did in a sluggish manner, the smoothness of the glazed surface evidently proving an ob-

stacle to their progress. At night they would become more active; frequently while sitting in an adjoining room, we could hear them gambolling and sporting in the water, but on taking a light to them, they were always found quiet at the bottom. This circumstance seems to indicate that the animal may be nocturnal.

They appeared particularly sensitive at the extremities, for on renewing the water, which was usually done about twice a-week, if poured from the spout of a watering-pot, so as to fall either on the head or on the tail, they would writhe under it, and swim away with great celerity. The three pair of red branchiæ were at all times in motion, opening and closing, at the rate of about eighty times in a minute; but not having taken notes of this I cannot be quite certain of the correctness of the rate. They would occasionally come to the surface and put out their snout, apparently for the purpose of inhaling air by the nostrils, for on again retiring to the bottom, a bubble of air was seen to rise from the branchiæ. Towards spring they gradually acquired appetite, eating small earthworms, which they swallowed in a peculiar manner, coming near the end of the worm, by a quick forward motion and sudden exertion they would take it down at one gulp, remaining themselves on the spot where their prey had been; if the worm proved too large to be swallowed at once, the animal was obliged to make a succession of exertions, with an interval of some seconds between each, before it could get the worm down.

They are capable of living out of water, as those which were caught were found crawling on the mud a little above low water mark. They also escaped from their confinement during the night, on one occasion, from the vessel in which they were kept being completely filled with water, which enabled them to

jump over the edge, and they were found in the morning under the floor of the greenhouse: two of them seemed none the worse, but the other, on being put into the water, remained with its back arched, floating on the top. unable to descend though making vigorous efforts so to do; it remained in that position for several days, after which it was put into spirits to preserve it. They were fond of taking refuge under any object which was put into their tub, evidently to avoid the light.

ART. 7.—*On the Natural History of the* "URSUS AMERICANUS;" OR, AMERICAN BLACK BEAR. *By* GEO. M. DOUGLAS, M.D.

[Read, 6th February, 1841.]

The subject upon which I propose occupying the attention of the Society, for a short time, this evening, is the Natural History of the Ursus Americanus; or, American black Bear. The beautiful specimen of which now before us having been lately added to the collection of the Society.

Until a very recent period, the black Bear of this Continent was confounded with the black Bear of Europe—the resemblance, however, is not so great but that any one seeing the two animals together, will at once admit, that they belong to species perfectly distinct, being different from each other in figure, in fur, in colour, and even in their gait, attitudes, and manners. The

Bear before us is naturally of a milder disposition than his European brother—lives more on vegetable substances, and, in consequence, a difference is found in the shape of the skull, especially to that part of it which gives lodgement and origin to the strong muscles of the lower jaw; the forehead is not flat, like that of the black Bear of Europe, but arched; the temporal ridges are, however, well marked, and unite to form a sagittal crest. The nose is continued nearly on the same line with the forehead, and is rather arched, which produces the most striking peculiarity in the physiognomy of this species. The ears are high, far apart, and rounded at their tips; the hair of the feet projects beyond the claws, which are black. The principal food of the Bear is vegetable—wild fruits, berries, roots, &c.,—but, when these are not to be procured in sufficient abundance he preys upon insects, eggs, fish, small birds, and such quadrupeds as he can surprise. Having once tasted animal food, however, like a sensible gourmand, he appears to prefer it to all others; hence, when near settlements, if he has once succeeded in capturing a sheep or hog, he is very apt to return to the spot or linger in the neighbourhood. It is naturally a timid animal, and will rarely face a man unless wounded or has its retreat cut off, or to defend its young. It possesses great tenacity of life, and when firearms are not used defends itself with great strength and agility; hence the chase of the bear is always looked upon, by the native tribes of this continent, as hazardous, and previous to setting out upon such expeditions, it is customary to propitiate the whole race of Bears by certain speeches and ceremonies. The speed of the black Bear, as may be inferred from his make, is not great, and a man may, without much difficulty, escape from him, especially if he makes for brush-wood or long grass; for, extreme caution being one of the characteristics of this

animal, he will, while in pursuit, frequently stop to reconnoitre, raising himself on his hind legs for that purpose.

This animal is the largest of that class which nature has gifted with the property of passing the extreme cold of winter in a dormant state, or as it is technically called, the state of hibernation.

This property in animals, exceedingly curious in all the circumstances that belong to it, is truly wonderful in its preservative power—a power which maintains the existence of the animal as well as if its vital actions were in full operation. While this state of hibernation continues, the usual vital processes are either suspended in toto, or go on with an extraordinary degree of slowness as soon as the former pass away the latter renew their action, and the animal springs into life with renovated power. From experiments made upon lethargic quadrupeds, by Signor Mangili, of Pavia, it appears, that the hibernating state only takes place within a certain range of temperature; that either too high or too *low* a degree of temperature prevents it from coming on—that the torpor is most profound when the temperature is at from five to seven degrees above zero—and that a more intense cold even revives the animal into activity. The application, too suddenly, of great heat, has the effect of destroying life—resucitation can only be effected by slow degrees. Animals, while in this state, although deprived of the capability of movement, with the eyes closed, and in an apparent state of death-like indifference, still possess a feeling of pain when sharply inflicted; a wound or burn causes them to contract. This property of hibernation is not confined to quadrupeds—birds possess this property in an eminent degree. I have often thought, that the partridges of this country possess to a certain extent, and under certain cir-

cumstances, this property. Whenever the degree of cold is very great, from ten to twenty degrees below zero, the partridge leaves the trees, his natural haunts, and in a very dexterous manner buries himself in the snow in such a way as to obtain a complete covering; he effects this by means of his tail, with which he carefully covers himself under the snow. While in this state he will allow himself to be approached within a short distance. I have kicked one up, with my snow-shoe, under similar circumstances.

It is to be regretted, that the experiments hitherto made upon animals in this state, have thrown little light upon the action of the heart—or in what condition the blood remains—we know that the lungs act, and *par consequence*, that the circulation continues, though very languidly. Our friend Bruin, prepares his winter quarters by selecting a spot where the wind has uprooted some large tree, he there, on the approach of cold weather, and just before a snow storm, scrapes away the earth to a certain depth and lays down, the rapidly falling snow soon furnishes him with a warm and close covering—his respiration makes a small opening or blow-hole, which leads the hunter to his discovery: the melted snow, in the spring time, run into his den through this opening, and with a changed state of temperature gives him notice to quit. Up to that period when he takes to his winter quarters, berries abound in the woods, and on leaving them, in the spring, many are still met with in the low grounds which have been rendered more palatable by the winter frost. It has been frequently remarked, that Beare never hibernate unless provided with a thick coat of fat, ands it is said, by Dr. Richardson, that when they come abroad in the, spring, they are equally fat, though in a few days after they become lean. Those hunters, with whom I have conversed, in Lower-

Canada, however, have never killed a fat Bear in the spring—even when smoked out of their dens (this being the usual means of destroying them) they are lean. In very severe winters, many Bears have been observed to enter the United States, from the northward—all of whom are either males, or females not with young. The coupling season, in this country is usually in the month of September, when the Bears are in good condition from the abundance of berries. Very soon after this period the female retires to her den, the site of which is selected with such care, that it is rarely discovered even by the lynx-eye of the Indian. The period of gestation of the female is not precisely known; it is supposed to be about sixteen weeks; the number of cubs varies from one to five, according to the age of the female. When the mother leaves her den they are still very small and like their European relatives, proverbial for their uncouth, clumsy appearance. The care with which the pregnant female conceals itself affords a solution of the remarkable fact, that to use the language of Brickell, "No man, either Christian or Indian, ever killed a she-Bear with young!" Dr. Richardson, likewise, assures us, that after numerous enquiries among the Indians of Hudson's Bay, only one was found who had killed a pregnant Bear ! In regions to the south of this, they usually select, for winter quarters, the trunks of hollow trees, which they not unusually construct at the height of thirty to forty feet from the ground. There appears to be much discrepancy in the statements of naturalists as to the hibernation of the Polar Bear. The generally received opinion now is, that the pregnant females only hibernate. The male, not depending solely upon the vegetable kingdom for food, is able to find subsistence even during the rigour of an artic winter. During the two winters that Capt. Parry remained on the coast of

Melville Peninsula, white Bears were frequently seen. It is supposed they go out to sea in search of food. Hearne, (whose interesting narrative of a Journey to the Coppermine River will be found in this library) states, and I infer from actual observation, that the males leave the land in the winter time and go out on the ice, to the edge of the open water, in search of seals—and there the female hibernates from December to March, bringing forth their young during that period; and, that when they leave their dens, in March, the young, which are generally two in number, are not larger than rabbits, and make a footmark, in the snow, no bigger than a crown piece. Mr. Graham, who wrote before the publication of Hearne's Narrative, describes the *she Bear* as alone hibernating; she takes up her residence in a different situation from the black: generally under the declivities of rocks, or at the foot of a bank, where the snow drifts over it to a great depth—she is described as being very thin and weak from suckling her cubs—so, as with difficulty to extricate herself, in the spring, from her den—they, at this season, always come down to the shore with their cubs, where they subsist on seals and seaweed. If, perchance, the youngsters are tired they ascend the back of the dam, where they ride secure either in water or ashore; and, though they sometimes are found thirty miles from the sea in the winter, they invariably make for the shore in the spring. I before remarked, that the chief food of the Bear of this country is derived from the vegetable kingdom; this applies more particularly to those found inland, or at a distance from the shore. On the shores bordering the Gulf of St. Lawrence, and on the Island of Anticosti more especially, the principal food is fish, either cast dead, on the beach, or caught when they approach the shore and creeks to deposit their spawn—among the chief of

these are herring and caplin. Brickel, in his History of North Carolina, says, speaking of Bears: "There you shall see these beasts sit and take up fish as fast as it is possible for them to dip their paws into the water." A dead whale affords them an occasional treat, which they share with the foxes.

One of the means, adopted by the fishermen, on the coast of Gaspé, to destroy them, is to place a small quantity of fish at a short distance from a hut, in which they secret themselves—on Bruin coming down, they shoot him with ease and certainty. In the interior, it is customary to kill them by means of a trap, rudely constructed with poles, loaded with stones and heavy timber, this weight is supported by a pole, to which a piece of meat or fish is fixed, in such a manner that the slightest pull brings down the whole affair upon the animal, and prevents his moving until the hunter arrives and despatches him.

In former years, Bear skins constituted a considerable part of the fur trade. In the year 1783, no fewer than ten thousand five hundred skins were imported into England, from the northern parts of America, and the numbers gradually increased until 1803, when it reached 25,000. The supply appears subsequently to have been greatly diminished, partly in consequence of the wholesale manner in which the destruction of the animal had been carried on, and partly in consequence of the preference given to the finer kinds of fur—at one time, when the skins were much used for muffs and hammercloths, the sum of from twenty to forty guineas was paid for a single skin, with the fur in prime order and the claws appended—at present such a one may be bought for about as many shillings.

It is a singular fact, that great similarity of feeling and ideas on the subject of the Bear, the manner of hunting him, &c., exists between the inhabitants of the North of Europe and

those of this continent. Regnard (Pinkerton's Voyage, vol. 1) informs us that the chase of the Bear is the most solemn action of the Lapland er, and the successful hunter may be known by the number of tufts of Bear's hair he wears on his bonnet. When the retreat of a Bear is discovered, the ablest sorcerer of the tribe beats the *Runic* drum, to discover the event of the chase (the same kind of drum or double-headed tambourine, painted with rude representations of wild beasts and of the heavenly bodies, is common throughout all the North American tribes). During the attack, the hunters join in a prescribed chorus, and beg earnestly of the Bear that he will do them no mischief. When they have killed him, they put the body on a sledge to carry it home; The reindeer which has been employed to draw it, is exempted from labour the rest of the year. A new hut is expressly constructed for the purpose of cooking the flesh, and the huntsmen joined by their wives, begin again their songs of joy and of thanks to the animal for permitting them to return in safety. Sears, also, in his Danish Lapland, acquaints us, that the Laplanders never presume to call the Bear by his proper name of *Guour Sija*, but term it, "*The old man, in the fur cloak*," because they esteem it to have the strength of ten men and the sense of twelve.

The Kamskatkans also consider the Bear as their great master in medecine, surgery, and the polite arts; they observe the herbs he has recourse to, when ill or wounded, and acknowledge him as their dancing-master, mimicking his attitudes and graces with great aptness. (Pinkerton, vol. 5.)

Mr. Alexander Henry, an Englishman, who visited the fur countries, soon after the reduction of Canada, gives a very minute account of a Bear hunt, by some Indians, which resembled that of the Laplanders. After the death of the Bear,

he says, the different persons approached, and all, but more particularly an old squaw, took the Bear's head in their hands and kissed it several times; begging a thousand pardons for taking away its life; calling her their relation and grandmother; and requesting it not to lay the fault upon them since it was truly an Englishman that had put her to death.

The flesh of the Bear, resembles, when in good condition, greasy and rather flabby pork; and, when fed on the coast or near rivers has also a fishy taste. The *Pemmican*, so much used as food in the north west, is compounded of lean meat pounded together with Bear's fat.

ART. 8.—*Notes on the* ANALYSIS *of the* GEORGIAN SPRING-WATER. *By* ARCHIBALD HALL, M.D., *Lecturer on Chemistry, University of M'Gill College, Mem. Nat. Hist. Soc. of Montreal, and Cor. Mem .Lit. Hist. Soc.*

[Read, 20th November, 1841.]

QUALITATIVE ANALYSIS.

1.—No change effected on either Litmus or Turmeric Papers; indicating the absence of free Carbonic Acid or Alkaline Carbonates.

2.—Sulphuric and Oxalic Acids produced slight effervesence, the latter accompanied with a precipitate; indicating the presence of an Earthy Carbonate.

3.—Oxalate of Ammonia and Oxalate of Potassa caused a speedy precipitation.

4.—The addition of Muriate of Baryta, was attended with slight cloudiness and subsequent precipitation, soluble partially in Nitric and Muriatic Acids with effervescence, thus giving evidence of the presence of Sulphuric and Carbonic Acids.

5.—Nitrate of Silver caused a dense curdy Precipitate, soluble in Ammonia; indicating Muriatic Acid.

6.—Carbonate of Ammonia having been added in excess, and subsequently Phosphate of Ammonia, and the whole

boiled, a copious precipitate was the result. The substitution of Phosphate of Soda for the Phosphate of Ammonia, in another experiment, produced a similar effect; indicating Magnesia.

7.—On boiling the water, for a quarter of an hour, a white deposit coated the flask, which dissolved in Muriatic Acid with effervescence; indicating the presence of an Earthy Carbonate.

8.—After evaporating a portion of the water, until a pellicle formed on the surface, cubic crystals began to deposit themselves. Some of them were dissolved in water and Muriate of Platinum added—no precipitate occured, thus proving them to be Soda.

9.—A quantity of the water was reduced to 1-15th of its bulk, Starch and Sulphuric Acid were added, while Chlorine water was made to float on the surface. At the point of junction between the liquid and the supernatant Chlorine water, a faint purple streak became visible; indicating Iodine.

10.—Treating the residuum, after evaporating ten ounces of water to dryness, by Muriatic Acid, disclosed a minute portion of insoluble matter, which was Silica.

11.—The Specific Gravity of the water from various experiments was 1.007.

From these experiments, the presence of the following ingredients is demonstrated:—

From Experiments, 2, 4, 7 ..... Carbonic Acid.
3 ..... Lime.
4 ..... Sulphuric Acid.
5 ..... Chlorine.
6 ..... Magnesia.
8 ..... Soda.
9 ..... Iodine.
10 ..... Silica.

QUANTITATIVE ANALYSIS,

1.—An eight ounce phial was procured, accurately balanced, and into it was poured 1,000 grains of the water. It was allowed to evaporate to dryness and the phial kept exposed to the heat for an hour, or until it was sensibly dry. On being weighed a second time, it was found to have increased in weight by 11.50 grains, which consequently is the amount of Anhydrous Salt in 1,000 grains of the water.

2.—1,000 grains of the water were treated with Nitrate of Silver. The Chloride of silver, washed, dried, and fused, weighed 25.5 grains; a quantity equal to 6.296 grains of Chlorine.

3.—4,000 grains were heated, and Oxalate of Amonia added; the precipitate was carefully washed and dried in the open air; it weighed 3.75 grains, equal to 0.937 grains Oxalate of Lime to 1,000 grains of water, a quantity proportional to 0.412 Lime.

4.—To 1,000 grains of the water, freed from Lime, by Oxalate of Ammonia, a solution of Carbonate of Ammonia was added in excess, and, afterwards, a few drops of Phosphate of Ammonia. The Ammoniaco-Magnesian-Phosphate thus obtained, weighed 2.25 grain; equivalent to 0.660 grains of Magnesia.

5.—To 1,000 grains, Muriate of Baryta was added; the precipitate, after careful washing and drying, weighed 1.50 grains, consisting of Sulphate and Carbonate of Baryta. Having been exposed to the action of diluted Muriatic Acid; the residuum, washed and dried, weighed 0.90 grains, thus giving 0.60 grains as the weight of the Car-

bonate; these yielded, respectively, 0.30 grains of Sulphuric Acid and 0.132 of Carbonic Acid in 1,000 grains of water.

6.—1,000 grains of the water were freed from Lime, Magnesia, Carbonic and Sulphuric Acids, in the manner stated, and Carbonate of Ammonia was added to precipitate any excess of Barytes remaining in the water. The whole was carefully filtered and evaporated to dryness, and the residue was kept at a red heat for an hour. It weighed about 7.20 grains, and was Chloride of Sodium equavalent to 2.880 grains of Sodium.

No experiment was tried to estimate the quantity of either the Iodine or the Silica. They were both in such minute quantities, that no good practical end would have been secured by it.

From these experiments the quantities of the different ingredients were as follows:—

From Experiment 2	Chlorine	6.296
3	Lime	.412
4	Magnesia	.660
5	Suplhuric Acid	.300
	Carbonic Acid	.132
6	Sodium	2.880
	Grains	10.680

These constituents were probably combined in the following manner:—

Muriate Soda	7.20	Chlorine	4.32
		Sodium	2.88
Muriate Magnesia	1.848	Chlorine	1.188
		Magnesia	0.660
Muriate Lime	0.269	Chlorine	0.151
		Lime	0.118

Sulphate Lim..... 0.510	**Sulphuric Acid..... 0.300**		
	Lime..... 0.210		
Bicarbonate of Lime 0.216	**Carbonic Acid..... 0.132**		
	Lime..... 0.084		
	10.043		**10.043**

Differences will be observed in the aggregate amounts given in the course of the experiments; but, we must observe, that they were conducted with an apparatus, by no means sufficiently delicate for such nice experiments; and in consequence, errors are not only easily made, but become, also, extremely difficult of detection. The analysis, however, is sufficiently accurate for all practical purposes. It indicates highly laxative properties—effects amply corroborated by experience.

The contents in an imperial gallon of 277·274 cubic inches will be as follows:—

Muriate of Soda.....	Grains	504.007
Muriate of Magnesia.....	"	129.361
Muriate of Lime.....	"	18.830
Sulphate of Lime.....	"	35.700
Bicarbonate of Lime.....	"	15.120
Hydriodate of Soda.....	"	0.500
Silica.....a trace		
	Grains	703.518

The Iodine must have been combined with Soda, in the state of Hydriodate, as no traces of Potassa could be detected. I do not think, from the faint evidences of it discovered, that a much greater quantity than half a grain could have existed in the gallon.

The medical virtues of the Spring are, as already stated, eminently purgative; and the water, therefore, ought not to be taken with too great freedom. It resembles, in some respects, the Airthrey Mineral Spring, near Stirling, in Scotland.

Note.—The Georgian Springs are situated on the borders of Lake George, a small lake in the Township of Plantagenet, on the south side of the Ottawa; about fifteen miles from L'Original and two miles from Grenville. The Springs are on the south margin of the Lake, which is connected with the Ottawa by a small stream, called George's River, affording a communication by steamboat. The rock, in the immediate neighbourhood of the Springs, is said to be composed of "Freestone." Limestone makes its appearance about one mile and a-half from the Springs, where it forms a high ridge.

ART. 9.—*Notes on* ESQUIMAUX BAY AND THE SURROUNDING COUNTRY. *By* W. H. A. DAVIES, ESQ

[Read, 19th February, 1842.]

The Great Bay of Esquimaux, or as it is more generally called, Esquimaux Bay, is a large inlet, on the east coast of Labrador, penetrating into the country in a south-westerly direction. It is situated about 250 miles beyond the Straits of Belleisle; the entrance lying in N. Lat. 54° 23′ West Long. 57° 25′.

It is by far the largest of the numerous inlets that indent that part of the coast. At its entrance it is upwards of thirty miles in breadth, from thence it decreases, until at the Post of Rigolet, about fifty miles from the sea, it is reduced to about a mile in

width, beyond this it again expands, and about 90 miles from the sea, it forms a magnificent salt-water lake of upwards of 20 miles in breadth, and in length fully 30 miles; at the western extremity of the lake, it again contracts to a narrow width for a short distance, above which it forms another lake about 7 miles wide and 20 long, when the head of the inlet is reached. Its total length may be taken at 150 miles and its mean breadth about 15 miles, exclusive of two large arms that join it in the neighbourhood of Rigolet, the one running to the south-east about 40 miles, and the other having a course nearly parallel to the main bay, and a length of 60 miles—including these arms, the surface covered by its waters may be taken at about 1,700 miles.

Many islands lie off the entrance of the bay, they are also very numerous in the bay—they are of all sizes, from the little rock hardly large enough to stand upon, to the large island many miles in extent—they add, in a great degree, to the danger of navigating the bay in foggy weather, for there is generally deep water close alongside of them.

The scenery along the shores of the Bay is of the wildest description, high hills are seen in every direction entirely bare of trees, particularly at the entrance where the country partakes in a striking degree of that barrenness which forms such a distinguishing feature of Labrador scenery—this barrenness and ruggedness is, however, only perceived when close to the shores, for when sailing along it, at the distance of from 4 to 6 miles, the rugged features of the landscape are softened by the distance, and the eye is deceived by the green of the moss, so that it requires very little aid from the imagination to suppose that it is a cultivated country that is presented to view,especially as the eye is immediately struck by the total absence of that

thick forest which is so characteristic of the shores of America, and the absence of which is generally indicative of the advance of cultivation. A closer proximity to the shore, however, dissolves the illusion, and by the time the foot has pressed it, the conclusion is formed, that a more rugged and barren country it would be difficult to imagine. Such are the scenes presented by the entrance of the Bay; as it is ascended an amelioration is perceived in the landscape by the gradual introduction of trees, first appearing at the bottom of small coves, and then gradually climbing up the sides of the mountains, until on arriving at the Post of Rigolet, the whole country is found covered with timber, small and stunted it is true, but still large enough to hide the ruggedness of the ground. Above the Post of Rigolet and on the shores of the salt-water lake, mentioned above, the scenery becomes very grand; the range of the Mealy Mountains here strikes the shores of the Bay, leaving but a narrow strip of land between the water and their base, from whence they rise 1,400 to 1,500 feet in height, almost perpendicularly, presenting the appearance of an immense wall, the resemblance to which is much increased by the extraordinary evenness of their summit. The Mealy Mountains are a range of mountains whose tops are first perceived about 100 miles to the south of Esquimaux Bay, running nearly parallel to the coast—they strike the shores of the bay, as already observed, near the commencement of the salt-water lake, along which they continue for about 25 miles, they then gradually leave the shore and after some distance, meeting with another range, coming in an opposite direction, they lose a part of their height, and are lost amidst the confused mass of hills that fill the interior of the country. The only level ground of any extent in the neighbourhood of the bay reaches from the head of it to the foot of these mountains.

Cartwright, as well as the Moravian Missionaries, state, that these mountains are always covered with snow, this is not exactly the case, as least, in that part that I am acquainted with—there is an interval of about 15 to 20 days at the latter end of August and first days of September, when they are free from snow except in the deep ravines, where the snow remains constantly. They derive their name I believe, from the patches of snow distributed over their surface during the greatest part of the summer, giving them the appearance of being powdered over with meal. When viewed in winter, in fine weather, at the time of sunset, these mountains present scenes of great beauty; and it is difficult for the imagination to conceive anything more beautiful than the tints that their summits assume as they are touched by the last rays of the setting sun, long after he has disappeared from the eye, while every little ravine, every inequality in their surface is chiselled out against the clear cold sky with a precision and vividness that are alike beautiful and wonderful.

RIVERS AND LAKES.

As may be supposed in such an extensive bay, numerous rivers flow into it, but three only are of large size, viz.: The Grand or Hamilton River, the Kenamou, and the Nascapee or North West River—of these the Grand or Hamilton River, flowing in at the head of the bay, is by far the most considerable, both as regards the length of its course and the volume of water it discharges. It is nearly half league in breadth at its entrance gradually decreasing in width for about twenty-five miles from its mouth; it then becomes from one-eighth to one-quarter of a mile wide; from this size it never varies very much as far up as it has been followed. Two hundred miles from its

mouth it forces itself through a range of mountains that seems to border the table land of the interior, in a succession of tremendous falls and rapids for nearly 20 miles. These falls were accidentally discovered, in 1839, by a gentleman engaged in exploring a route to Esquimaux Bay from the interior. Above these falls, the river flows with a very smooth and even current; it has been followed for 100 miles further, where a Post has lately been established—between the falls and the Post it passes through a succession of very large lakes, communicating with one another by short straits—these lakes appear to cover a very considerable part of the table land; they have not yet been explored, and their dimensions are, consequently, not known but from Indian report; many present a water horizon in different directions as portions of them are crossed. Above the Post, called Fort Nascapee, the river has not yet been explored, but the Indians report that it comes from a long distance to the westward, and runs with a deep and gentle current unobstructed by falls or rapid—it is supposed to come from lakes in the rear of the Seven Islands. If this is the case, and there is every reason to believe it to be so, it developes a curious fact in the formation of that country, viz.: that a large river should flow for so considerable distance on the top of the ridge, if I may so express it, between the head waters of the rivers falling into the St. Lawrence and those falling into the Hudson's Bay and Straits, for they are said, by the Indians, to be quite close to the waters of the Grand River on either side. The course of the river from Fort Nascapee to the place where it forces itself through the mountains is to the southward of east, it then turns to the east, and finally to the north-east, the latter course it pursues until it falls into Esquimaux Bay.

The Kenamou River flows in from the south, about 13 miles

from the entrance of the Grand River—it is a considerable stream, taking its rise in the country lying between the Gulf of St. Lawrence and Esquimaux Bay; its course is therefore short, and as the lakes from whence it takes its rise, are at a high elevation, it is extremely rapid and full of falls. I had it explored for about 80 miles; in the whole of this distance it was nothing but a succession of rapids. Its banks are mountainous. About 30 miles from its mouth it cuts through the range of the Mealy Mountains.

The Nascapee River or North West River is rather a large one, and falls into the Bay on the north side, very nearly opposite to the mouth of the Kenamou River; the distance between the entrances of these two rivers (which is the breadth of the Bay at this place) is 12 miles. About 2 miles from its mouth, it passes through a narrow lake, about 40 miles long, bordered by high mountains ; a little below the head of the lake (called the Grand Lake) the river flows in from the north-east, it keeps this course for about 25 miles, when it bends very considerably and flows from the north, its course from thence to its source is only known at intervals, as in consequence of numerous rapids and falls, the river is left and the route to the interior is pursued through a series of lakes until close to Lake Meshagamou, from whence its waters flow, when the river is again followed as far as that lake. Meshagamou, or the Great Lake, is one of the lakes occupying the table land of the interior—it is of considerable size; it has not however been explored, as yet, by the whites. It is one of the lakes with which the Grand River communicates. Among the largest of the other rivers flowing into Esquimaux Bay, may be mentioned the Goose Brook, the Double Mêr River, Moulagan River, the River of Goose Bay; the whole of these rivers, though some

are of large size at their entrance, are short and are not navigable for anything larger than a small canoe.

The country, in the neighbourhood of Esquimaux Bay, abounds in lake of all sizes and shapes, from the small pond of a few acres in length to the large lake of twelve or fourteen leagues long; this is indeed, the case with the whole of the Labrador coast, but however they may vary as to their sizes and shapes, there is one feature in which they all agree, that is in their shallowness—and this is found to be the case in all the lakes of the Atlantic slope, with the exception to those which communicate directly with the ocean or with some of its bays, these are in general distinguished for their depth. This almost universal shallowness of the lakes is a singular feature, when the nature of their borders is taken into consideration, as they are generally surrounded by hills, which would lead one to look for a corresponding depth in the lake; but, instead of this, some are so shallow, that for miles there is hardly water enough to float a half-loaded canoe. I am informed by my friend John M'Lean, Esq., that this is likewise the case with the lakes lying on the water-shed of Ungava Bay. The lakes, lying *on* the table-land, are said to be deep.

The largest lake, in the immediate neighborhood of Esquimaux Bay, is the Grand Lake, already mentioned—this lake, which communicates by a short strait with the bay, is about 40 miles long, and varies in breadth from one to two miles—it is very deep; so deep indeed, that it rarely freezes before the middle of December, nor does it break up till the middle of June; it is bordered by high precipices, at the foot of which the ice is constantly kept clear of snow by the violence of the wind, and is so transparent, that the eye can penetrate into the depths below as unobstructed by it as if none was present; indeed, the

illusion is so complete, that I have often caught myself shrinking back with instinctive dread, when about to place my foot upon one of those clear spaces, under the momentary apprehension of stepping on open water. The other lakes do not require any particular notice. Before, however, quitting the subject of the lakes I may state the fact, that they are in general, very destitute of fish—this may be accounted for, in some degree, by their shallowness—this is not however, the only cause, as even the Grand Lake, although so deep, is almost destitute of them—the large lakes of the interior, with which the Grand River communicates, are however, well supplied.

FACE OF THE COUNTRY.

The face of the country, in the vicinity of Esquimaux Bay, on proceeding to the northward and westward is extremely rugged and hilly it is composed of ranges of round-backed hills, traversing the country in all directions; they do not, in the interior at least, assume the altitude of mountains—the intervals between them are filled either by lakes or marshes; so that in looking down from the brow of some more elevated hill, an interminable succession of naked hills and lakes is seen, giving an indescribable aspect of desolation to the country, which is greatly heightened by the effects of the fires that have ravaged the whole country. Indeed, there can be but little doubt, that at one time nearly, if not the whole, of the interior of Labrador was covered with wood, which has since been destroyed by fire; in almost every direction, the naked stumps of trees are seen, rising out of the moss that now covers the country. Hundreds of miles of the country are now nothing but a barren waste of naked rock from this cause, which in the recollection of some of the old hunters were covered with wood formerly.

These fires are caused, in a great measure, by the inflammable nature of the moss that covers so large a portion of the ground, and which, when dried by a continuance of fine weather, will ignite by a spark, and burns with great rapidity. Notwithstanding that the Indians are well aware of the danger of so doing, they generally make use of the moss, when they wish to inform their friends that they are in any particular part of the country, and this they do by setting fire to it. I once had an opportunity of witnessing the rapidity with which the fire spreads in the moss and the ravages that are caused by it. In 1840, I ascended the Grand River, for the purpose of exploring it, after having been out about ten days, I felt anxious to ascertain if any Indians were in the neighbourhood, in order to acquire information from them respecting the country in the vicinity;—I, accordingly gave orders, to a couple of Indians I had with me, to make a signal by smoke, so that if any Indians were in the neighbourhood, they might be warned of our approach, and come and meet us. I encamped for this purpose, and while the men were engaged in pitching the tent, &c., the Indians went to the summit of a neighbouring hill, about a mile off, and there collecting a quantity of moss, set fire to it, and immediately rejoined me—about half an hour afterwards, while sitting at the door of the tent, enjoying a cool breeze that had just sprung up, I was startled by a noise like thunder, and ere I could spring to my feet, I was warned, by the frantic shouts of my men of the danger that was approaching. It was with the utmost difficulty that we could launch the canoe and hastily throwing our things into it, contrive to decamp before the fire reached our encampment; indeed, all our haste would have been of no avail, had we not fortunately been encamped in a spot of green wood—such was the rapidity with which the

flames advanced, that one of my men, who had wandered a little way from the encampment, had the utmost difficulty in saving himself, even at the top of his speed. Before we had time to reach half-way across the river, which was here about a mile in breadth, the whole mountain, from top to bottom, was one sheet of fire. The fire lasted for upwards of three weeks, and spread over, and completely destroyed, an extent of some hundred of square miles. The Indians also state, that fires are frequently caused by lightning striking the dried stumps of trees—the frequency of this cause, as alleged by them, is singular, as thunder is very uncommon there. The desolating effect of these fires is also greatly, enhanced by the fact, that no second growth appears where the fire has passed, so that the country, ever after, remains completely denuded of wood.

To return, however, to the appearance and face of the country to the northward of Esquimaux Bay. A great portion of it is covered with enormous boulders, in immense numbers: they add greatly to the labour of traversing the country from one lake to another, as considerable risk is incurred of breaking a limb by falling between them. The following extracts, from the report of a gentleman, who was sent to explore the country on the Nascapee River, will give a very good idea of it:—

"From North-west River House, the River Nascapee is ascended for about 65 miles when it is left at Mont a Peine Portage, from thence you follow from one lake to another—most of them very small. The country, from Mont a Peine Portage, as far as the Little Seal Lake, is as barren and as miserable as can be seen any where; the trees are all burnt, and nothing but stones and dry stumps to be seen—there is not even earth or moss enough, in most of the carrying-places, to make a foot-path. Beyond the Little Seal Lake, the country becomes

a little better; a few green trees are met with, until the Portage called She-pay taw-wa Kaw, or Seven Mile Portage, where the country becomes still more barren and burnt—this continues to be the case as far as Meshagamou Lake, where, on the First of July, the ice was still firm—there is no wood to build there; it is only at Gull Nest Lake where wood to build could be found; this Lake is but a short distance from Lake Meshagamou. From North-west River House to the latter lake there are 45 Portages, two of which are from 5 to 7 miles long, and several are 2 miles. Of the lakes passed through, 10 were from two miles and a-half to 12 miles long, and from 5 to 6 miles broad; these were the largest—the others were from 2 acres to one mile and a-half; most of them are destitute of fish and all very shallow. On the 22d, 23d, and 24th June, we found the lakes full of ice; we advanced by making portages over the ice or through the woods, and by creeping along the small lanes of water near the shores—the borders of the River Nascapee, when we ascended it, were still lined by ice, some of it ten feet thick."

Such is the nature of the country to the northward of Esquimaux Bay; to the southward of it, the country, though in some respects similar, is much more level and is more clothed with trees. After passing the first range of mountains, on leaving the Bay, an elevated plateau is gained, which continues until the shores of the Gulf of St. Lawrence are approached, when the country becomes more mountainous and slopes rapidly to the seaside; the breadth of the plateau may be about 140 miles—it abounds with lakes, some of them of considerable size, but so shallow, that according to the gentleman who explored it by my orders, 'they might rather be called swamps overflowed with water than lakes;'—the rivers

likewise that traverse this part of the country though broad are exceedingly shallow. The whole of the interior of it is covered with wood, though it is very stunted and thin in some places; but, as you approach the coast of the Gulf, the wood diminishes until it disappears altogether on the coast.

The Valley of the Grand River, for about 100 miles from its entrance, presents a pleasing contrast to the barrenness of every other part of the country round the Bay. This valley is very well timbered, and some of the trees are of a large size; intermixed with the spruce is a considerable quantity of white birch, and a few poplars are also to be seen; a light loamy soil is also, frequently to be found on the points of the river. There is a difference of 20 days in favor of this valley in the spring and fall, this difference of climate is to be attributed, in a great degree to its favorable aspect, to the south and west, and also, in some measure to the superior warmth of the water coming from the westward.

GEOLOGICAL REMARKS.

The rock formation in the neighbourhood of this Bay consists of Granitic and Syenitic compounds—these coumpounds are intersected by veins of Quartz running in all directions—they are also traversed by wide veins or dykes of Trap, which being of a softer nature than the surrounding rock, wears away quicker, leaving large fissures and hollows in the face of the rock. Many of these rocks put on the appearance of some Lime stones from the incipient decomposition of their Felspar.

In some places Mica Slate was found—it is said, that the Mealy Mountains are composed of this rock—I had no opportunity of verifying this fact, as I did not visit them. Granite was only seen in one place, viz.: on Lake Keith, an expansion

of the Grand River, about 130 miles from its mouth. Specimens of Chlorite Schists were also procured on this lake, as was also a specimen of Sandstone, with disseminated grains of Iron Pyrites. At some distance below the lake, Primary Marble, of a beautiful whiteness, was seen cropping out at the edge of the water, it was found in contact with a Quartz rock passing into Mica Slate, having crystals ofcommon Garnet imbeded in it—this was the only place where Limestone of any sort was seen.

The shores of the Bay, where they are not of rock, are generally composed of rolled fragments of Syenite, Mica Slate, Quartz, Hornblend, sometimes in large masses, Felspar, &c. Magnetic Iron, in the form of sand was also met with in some of the small coves.

Some parts of the country are covered with numerous boulders, as already noticed—they are for the most part composed of a light-coloures Syenite, some of them are of great size.

On removing the covering of moss, which covers so large a portion of the country, the naked rock is revealed, or else a coarse sand is found, exactly resembling that now seen on the shores of the Bay. Numerous evidences were observed in every part of the Bay, of changes in the relative positions of the land and water having taken place, either by the upraising of the land, or by the retiring of the water. In some places, upwards of 50 feet above the present level, and at the distance of more than a mile from the present shore, furrows and ridges, exactly similar to those now forming on the sand shore, were found—these ridges were covered with trees, which from their size and the slow growth of timber in that country must have been of considerable age—the trees on those ridges which approach nearest to the present shore were of a much smaller description than those growing on the more distant ridges.

With the exception of the Magnetic Iron Sand, noticed above, and a few small specimens of Iron Pyrites, no metallic minerals were met with. A specimen of Native Copper was procured from the natives to the north of Esquimaux Bay—it was part of a large piece, found by an Esquimaux, on the beach, about 15 miles to the south of Hope Dale; it was very much water worn. Labrador Felspar was not met with *in* the Bay, the specimens I collected of it were from Kibokok Bay, about 150 miles to the north of Esquimaux Bay.

CLIMATE.

There is a marked difference in the climate at the head of the large bays, on the coast of Labrador, such as Esquimaux Bay, and that experienced on the immediate borders of the ocean, in favor of the former; this must be borne in mind, as the remarks that I shall make are principally drawn from experience, acquired at North-west River House, situated near the head of the Bay, about 135 miles from the entrance; it was here where I passed the greatest part of the winter.

About the middle of May, the snow, in exposed situations, begins to give some indications of the sun's power. From the 25th to the end of the month the catkins of the willow begin to open—geese begin also to make their appearance, about this time, if the season promises to be an early one. About the first week in June the ice in the bay generally gives way, in ordinary seasons, and in four or five days afterwards, the navigation of the Bay is once more free.

The heat, in summer, is often great, though it seldom lasts beyond a single day at a time. I have seen the thermometer as high as eighty-six degrees, at four o'clock, p.m., and once, on the 21st August, 1840, it rose as high as ninety-four degrees in the

shade—these excessive heats never last above two or three hours—the sense of oppression felt during their continuance is very great; the range during July and August may be taken at from fifty to seventy degrees. The nights are generally very cool and agreable; June is commonly a rainy month; July and August are usually dry; as September advances bad weather becomes much more frequent, and in October, it is rare to have more than one fine day at a time. By the latter end of November the Bay is generally frozen over. Snow most commonly begins to fall about the middle of october; on the exposed places,it often melts off again for a little while, but in the woods it generally remains; in the woods and hollows the snow may be said to lie for eight months of the year. During the winter, the weather is generally clear, particularly in January and February; the largest quantity of snow falls in March. Rain seldom falls in winter, when it does it is mostly in January. The greatest cold experienced in 1839—'40 and '41, was:—

In 1839, January 23, when the thermometer was at —37 deg.
" 1840, Febry. 4, do. do. do. —35 "
" 1841, do. 9, do. do. do. —25 "

It must be remarked, that these were the degrees of cold shewn by a spirit thermometer, and will, of course, require a correction to make them equal to what a mercurial thermometer would have shewn; according to Deluc and De Wildt, the degrees, by a mercurial thermometer, would have been from 40° to 50° below zero. The winter of 1840—'1, was an extraordinary mild one.

The most prevalent winds are from S. E. round by the North to the South-west, but this is owing greatly to the draught of the Bay. The Easterly winds always bring bad or cloudy weather—the North winds are also, accompanied by bad

weather, especially in winter—the other winds are generally attended with fine weather.

These observations, it must again be remarked, are applicable only to the country at the head of the Bay; for, as already observed, a great difference in climate is experienced as the sea-coast is approached. The cold in winter is there much more intense, and the weather far more boisterous, the winds often blowing with terrific violence, accompanied by so thick a snow-drift that nothing can be discerned at the distance of four or five yards. The summers are likewise much cooler, indeed, they are generally so cool that it is very rarely that a stove is found unpleasant. The large number of icebergs that are brought down by the constant current that sets to the Southward along the whole coast of Labrador, tend to keep the temperature on the coast low. Until the middle or latter end of July the coast is also much infested with drift ice, especially when the winds from the Eastward prevail. Fogs are not quite so frequent at the entrance of the Bay as they are more to the Southward—at the head of the Bay they are comparatively rare. On the whole, the climate of Labrador is extremely healthy, if we may judge from the few disorders that are prevalent; these are mostly confined to rheumatisms, colds, and a species of influenza, with which persons who have lived some years there are almost invariably attacked on the arrival of the vessels in the spring; it is rarely, if ever fatal to the whites, but is often so to the natives.

GENERAL REMARKS—INHABITANTS, &C.

Davis, in his Second Voyage of Discovery in 1586, is the first that appears to have noticed this extensive bay; for there can be but little doubt, that the large opening which he saw in

Lat. 54° 30′, "Entering in between two lands, the lower all islands," was the mouth of this bay, answering as it does, both in appearance and situation to it. The French however, were the first who gave the bay its present name, and resorted to it for trade, which they appear to have done at an early period, for the bay appears under its present name, in maps published by them very early in the last century; and in some of them, the form of the Bay is laid down pretty correctly. After the loss of their possessions in Canada, they abandoned the trade to Esquimaux Bay, and some time elapsed before the English took it up, for it was only in 1777, that the first Englishman wintered in the Bay—his son was still living there a year ago he found the remains of the old French establishments in many parts. In 1785 a Canadian from Quebec, wintered there, since that date, establishments have always been kept up in the Bay, by merchants and others of Quebec; after undergoing numerous changes, these establishments fell in 1837, into the hands of the Hudson's Bay Company, in whose possession they still remain. In the meantime, the knowledge of the Bay, possessed by the French geographers seems to have been gradually lost, as well as the name given to the inlet—instead of which the native name of Invucktoke appears to have been appropriated to it, and the entrance only marked in the map, until the last edition of Arrowsmith's Map of the British North America, where the Bay once more resumes its form, with the name of Hamilton's Inlet tacked to the native designation. It is not however, very accurately laid down, the distance from the entrance to the head of the inlet being made much shorter than it really is.

The residents of Esquimaux Bay may be classed as follows, viz.: Persons in the employ of the trading companies, Planters or freemen, Esquimaux and Mountaineer Indians.

The first class are now confined to the servants of the Hudson's Bay Company, who are now the only Company that have permanent establishments in the Bay—they amount to fifteen or twenty individuals.

The Planters or freemen, are composed of persons who have come out in the service of the different mercantile establishments, and at the expiration of their engagements have remained in the country, hunting and fishing, on their own account, receiving the necessary supplies from the nearest establishments, and giving in the produce of their hunt, &c., in return; a great portion of this class is now composed of the offspring of former planters with the Esquimaux women. The mode of living of these two classes is in some degree similar—the following is a short sketch of the annual routine pursued by the first class.

Immediately after the business of the summer season is closed, by the departure of the vessel, generally about the middle of September, the men are sent into winter quarters; that is, they are sent in parties of two each, up the different rivers, to pass the winter in trapping martens and other animals; they live in small huts, warmed by a stove; their work consists in visiting their traps, keeping them free from snow, and in hunting for a part of their subsistence. Their traps are either steel ones, or made of wood, technically called "dead falls"—these latter traps are constructed in such a manner, that the animal on taking the bait, pulls down a heavy piece of wood that crushes him. The traps for martens are placed along a blazed path (called a "cat path") leading into the interior, and varying in length from one to three days' walk, according to the address and activity of the hunter—the traps for foxes are placed along the borders of the rivers or bays. The men, on leaving the main Post, are furnished with a certain quantity of pork, flour, and ammunition,

which is expected to last them until they return in the spring, generally about the first or second week in June. On the breaking up of the ice, they return to the post, when preparations are immediately commenced for the salmon-fishery, and when that is over the cod fishery is pursued until the end of the summer season. Such is the general routine followed in Esquimaux Bay—but, in places where the seal-fishery is pursued, the men do not go into winter quarters before that fishery is finished, which it seldom is before December—other local variations take place, but such is the general routine of the year. The life the planters lead is one very similar to the above, with the exception, that having generally large families, they most commonly winter on the immediate shores of the Bay if possible, for the convenience of hunting ducks in the spring, for the subsistence of their families. Their number may be on an average, about forty-five souls, of these eight are white men, the remainder half-breed Esquimaux. They are very uncertain in their movements, often wintering in places widely remote from their former habitations, for as they invariably carry all their property with them, in their annual migrations to and from their summer residence, they are not at all under the necessity of returning to the winter-house they last occupied, unless the situation should happen to be a favourable one; their migrations are performed in open whale boats, in which they will often make voyages of a month's duration, the women managing the boats as well as the men, and pulling an equally good oar. Even in summer, some of them are continually changing their quarters; passing the first part of the summer in fishing salmon, in the neighbourhood of Rigolet, and then going to the entrance of the Bay, to pursue the cod fishery, until it is time to return to winter quarters. The life these people lead is one of great

hardship and fatigue, from their constant exposure to the weather, and the necessity of using the most strenuous exertions, to subsist their families, for the provisions they are enabled to purchase from the traders are never sufficient to support them during the long winter; the constant decrease of the hunt and fisheries, of late years, has also greatly augmented their misery.

The Bay was formerly the principal residence of the Esquimauxs, from the facilities that it offered for living, the seals frequenting it in great numbers, and remaining in the Bay during the whole winter. But the number of seals has been gradually diminishing of late years, this has caused many of the tribe to leave the place; we must however look to the combined effects of the rum and the vices, imported by the Europeans, for the great diminution that has taken place within the last sixty years in the number of the Esquimauxs belonging to the Bay; even as late as the beginning of the present century, they numbered upwards of 300—they are now reduced to eight families, consisting of thirty-four individuals, viz.: nineteen males and fifteen females.

They have abandoned almost the whole of their former manners and customs, and assimilated themselves as much as possible to the whites, whose example, I regret to say, has not always been conducive to the improvement of their morals. In the summer they are generally employed in hunting for seals —killing them principally with their harpoons, the use of the gun having been found to have the effect of frightening away the seal. When not thus engaged, they are mostly employed in fishing cod, which they dispose of to the traders. In winter they subsist chiefly on the seals they can kill by watching for them at the holes in the ice, which these animals frequent for

the purpose of breathing. In the month of May, the seals and their young, which are then just born, frequently come to bask on the ice and to enjoy the heat of the sun; they are then killed often in considerable numbers, by the Esquimauxs. They rarely hunt the fur-bearing animals, except the fox, for which they sometimes set traps. As the seal furnishes them with clothes, food and light, it is not surprising that they should devote by far the greatest part of their time to the pursuit of that animal, so infinitely more valuable to them, and so much more easily killed than martens and other animals of that sort, whose carcases, when caught, would yield them little or no food.

They are generally docile and obedient when employed as servants which they sometimes are—like all other Indians, they are incapable of continued exertion for any length of time, except it is for the chase. As they invariably travel with dogs they are but indifferent walkers, in this respect, they are far surpassed by the Mountaineers; they however, much exceed the latter in the ingenuity and neatness which they display in the construction of the different articles they require. Their manner of tackling their dogs, mode of travelling, &c., exactly resemble the description given by Captain Parry of the Esquimauxs to the north. Being more in the habit of living in communities of several families together, their intercourse with one another is rather more kind I think, than that of their neighbours the Mountaineers; though occasionally, acts of great cruelty and indifference to suffering have come to my knowledge, especially among the women. They are often driven to great extremities by hunger, under these circumstances, cannibalism is not unknown amongst them—nor is it looked upon with that great degree of horror that it is among the Mountaineers; for a women that was pointed out to me as

having, under the pressure of want, devoured several members of her family, and among others her husband, found no difficulty in procuring another partner. The example and exhortions of the Whites have been successful in putting an end to the horrid practice, formerly very prevalent among them, of burying the living infant with the dead mother !

They are not personally brave—at least, not in our sense of the word brave—for in their quarrels, they never attack their antagonist except they have the advantage of numbers or strength on their side—they are also easily overawed by a stern look and an angry tone of voice, on the part of the white —yet, in other respects, their courage is undoubted, as their encounters with the fierce and savage Polar Bear sufficiently testify, for they do not hesitate to engage him single-handed.

The Esquimauxs, frequenting the Bay, have little or no notion of religion. Some years ago, a Wesleyan minister remained for a winter in the Bay—during his stay they paid great attention to his exhortations; he would no doubt, have done some good, had it not been for the pernicious example of the whites that constantly nullified the good effects of his preaching. Tired and disgusted at the manner in which he was treated by the whites, and at the effect their bad example had upon the natives, he left the following summer, and none have ever been there since, In this respect, as indeed in most others, the Esquimauxs to the north have greatly the advantage over their brethren in Esquimaux Bay.

The Mountaineers, whose hunting-grounds are in the vicinity of the Bay, are a branch of the Cree Nation, a dialect of whose language they speak. They are very much reduced in number; of the thirty-two families that frequented the Bay in 1840, only nine belonged to it, that is, whose hunting-grounds were in the

neighborhood, the remainder were from the Posts on the St. Lawrence, from whence they had been attracted by the great number of Reindeer in the vicinity of the Bay. These nine families comprised 48 individuals, in which however are included several orphans and widows. They resemble in every respect the Indians of the King's Posts. From the great abundance of Reindeer throughout the whole of this country, they might, if they would keep from rum, make themselves perfectly independent of the whites; but allured by that pernicious liquor, they are sunk into a state of abject slavery; and their intercourse with the whites has but served to degrade them even more than it has done the Esquimauxs. As they stand greatly in awe of the latter people they rarely descend the Bay; passing the summer in the vicinity of the Post of North West River, at the head of the Bay, where the Mountaineer trade is carried on. In winter, their time is chiefly spent in the chase of the Reindeer—in summer, when the deer retire to the north or to the tops of the high mountains, out of the way of the flies, they generally subsist on fish, wild-fowl and seals. Resembling as they do, the Indians of the King's Post in every respect, little need be said on the subject of their manners and customs. The Reindeer is to them what the Seal is to the Esquimaux, and like them they are consequently poor hunters of the fur-bearing animals. With the exception of those who have visited the Posts on the St. Lawrence, where they have had an opportunity of seeing a Roman Catholic Priest, they have no idea of religion—they however generally bring their infants to the nearest post, to be baptized by the clerk in charge; but this is from an idea, that it will in some way make him a better hunter, and not from any religious motives. Degraded as they are, they yet look with great contempt upon the Nascapees, a

tribe whose hunting-grounds are entirely in the interior, and who have, until lately, had very little intercourse with the whites—giving as a reason, their greater advancement in civilization ! as evinced by the rum they can procure.

Their rivers and lakes being covered with ice for nearly two-thirds of the year, they do not travel much in canoes, and are consequently not good canoemen, being very timid—in this respect they are far surpassed by their brethren in the King's Posts.

They have an exceeding dread of the Iroquois, a singular fact, as shewing how far-spread was the dread excited among the Indian nations, by that warlike tribe, and how long the tradition of their ferocity has continued to be handed down.

TRADE.

The trade of Esquimaux Bay, formerly of some consequence, has been gradually diminishing for some years past, and is now extremely limited—it is confined to a trifling bartering trade in cloth, blankets, guns, ammunition, and provisions, with the Planters and Esquimaux, who in return give a little seal oil, salmon, codfish, and a few furs—this trade is principally carried on at the Post of Rigolet, about fifty miles from the sea. The trade with the Mountaineers, as already mentioned, is carried on at the head of the Bay—cloths, blankets, guns, ammunition, and a little flour, are given to them, in exchange for the skins of martens, foxes, deer, lynxes, wolverines minks, beaver, &c.—the quantity procured is very small in proportion to the number of Indians, and the trade is very far from being a profitable one, on account of the expense attending it. It is at present, entirely monopolized by the Hudson's Bay Company, as well as the trade of Rigolet.

At the entrance of the Bay, are situated two small cod fishing establishments, carried on by people from Newfoundland, who likewise have a little trade with the Planters and Esquimauxs, but the amount of business thus done is very trifling. During the codfishing, a few American vessels visit the Bay—of late years the catch has not been great—the fish appear to be more numerous further north, where the Americans generally follow them—a solitary trading-vessel, from Nova Scotia, now and then finds its way as far as the Bay.

The salmon fishery is principally carried on in the neighbourhood of Rigolet—the nets are set at the different points of the Bay when the current is strongest. The catch is now very small—the total export of the Bay hardly exceeding 120 tierces when formerly it surpassed 400. Nearly all the seal oil exported from the Bay is the produce of the hunt of the Esquimauxs; the Bay not being advantageous for carrying on fisheries for that animal. One small vessel is employed by the Hudson's Bay Company in the trade of the Bay—it is found more than sufficient for it, and it is sent every second year, as far as Ungava Bay, in Hudson's Straits, to collect the returns of that district.

LITERARY AND HISTORICAL SOCIETY OF QUEBEC.

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THE Council of the Literary and Historical Society of Quebec, in giving to the public this part of the transactions of the Society, think it right to state, in reference to

the length of time that has elapsed since the papers included in it were read before the Society, that it has been, as they are informed, in print for some years past, but its publication has been delayed from various causes, latterly from the loss of a portion of an interesting article, "A Comparison of the "French and English Languages," by the late Dr. WILKIE.

The Council have, however, thought it advisable to direct the publication of this part without further delay, omitting the imperfect article which, should the missing portion be found, will be included in some subsequent number of the Society's Transactions.

The Council desire to take this opportunity of stating, that, with very few exceptions, the communications read before the Society for some years past, many of which would have found a worthy place in the Society's Transactions, were destroyed in the Society's Rooms, at the Parliament Buildings, during the recent fire.

The Council feel warranted in adding, however, that, notwithstanding the serious loss, as regards materials for publication, thus sustained, they trust to have it in their power to publish another number of the Society's Transactions before very long; and they think they may promise that in future the publication of their proceedings will be more regular and rapid than heretofore.

In reference to the heavy losses sustained by the Society in the recent destruction of the Parliament Buildings; The Council think it may not be out of place to add here a Circular addressed by their direction to several sister Societies and private Individuals of this Continent and in Europe, who, it was thought, might feel disposed to aid the Society in the present emergency.

QUEBEC, 8th March, 1854.

SIR,

I regret to announce to you that in the destruction by fire of the Parliament Buildings at Quebec, the Literary and Historical Society, whose Library and Museum were situated there, also shared in the general disaster.

Some of the Books, all the Manuscripts, and part of the Philosophical Apparatus, have been saved, but the loss in Minerals, Specimens, and objects of Natural History, has been very great, few of the original number having been saved.

At this crisis I beg leave, by direction of the Council, to bring to your knowledge this melancholy occurence so disheartening to a young and struggling Society, and to suggest, that any Specimens, Minerals, or other objects which may tend to promote the cause of science and which could be spared by you, would be gratefully accepted by us.

I am,
Sir,
Your obedient Servant,
H. SAVAGE, LIEUT. R. E.
Corresponding Secretary.

Quebec, 22nd March, 1854.

ARTICLE 10.—TABULAR VIEW OF MINERALS WHICH DECREPITATE WITH HEAT. *By* CAPTAIN F. H. BADDELEY, *R. E., Member of the Geological Society of France, Hon. Mem. of the Lit. and Hist. Soc of Quebec, and Corr. Mem. of the Nat Hist. Soc. of Montreal.*

The grouping together, under important and striking characters, common to them, the various and almost countless subjects in Natural History, has ever been admitted to be the only way in which an extensive knowledge of the Science can be acquired. It not only is the thread by means of which the interminable labyrinths of its study are explored, but it places before the student, those beautiful, instructive, and often curious analogies, contraries and coincidences, all of which it would be impossible to perceive without its assistance; and enables him to form correct and useful generalizations; it allows him, in short, to collect and examine the gems and stalactites—the ores and other mineral productions in the cavern of Natural History —by keeping constantly in sight of the guide and his torch.

Some years ago, with a view to familiarize myself with the characters of minerals, and to discover some of the analogies, &c. alluded to, I made various groups or tests of them, under different characteristic headings; a reference to which, it was likewise supposed, might assist me in determining the nature of

a few of those I should meet with. It is not pretended that there is anything novel in this mode of arrangement, as various lists of minerals, bearing particular relation to their specific gravities, hardness, and colour, &c., have been printed. I only propose to offer you other lists, headed by other important and striking characters, common to the minerals in such lists; and, as there are not any more so than those which the application of heat discloses, it is further proposed to commence with them.

It is well known, that the immediate, or almost immediate effect of an elevated temperature upon some minerals, is to cause them to decrepitate, or fly into particles suddenly, with a crackling report, more or less violent—a phenomenon which may be regarded as the noisy boasting of the enemy, caloric, over his yielding antagonist, cohesion. Some minerals never fail to exhibit this character, before the blow-pipe or in the matrass, while in others it is capricious; but. as it is one which cannot be mistaken for another, and is, moreover, confined to a few minerals comparatively, a list will be presently introduced of those minerals which are said, by distinguished mineralogists, to decrepitate with heat, while opposite to every member in that list or table, will be affixed other characters, for the very obvious purpose of further distinction; previously, however, a few observations are introduced upon the cause of decrepitation, and upon the mode of exhibiting, &c. Two causes have been assigned by chemists for the occurence of this phenomenon, viz.:—

First,—The sudden conversion into steam, by caloric, of the water which the minerals previously contained.

Second,—The unequal expansion of the laminæ, of which the minerals are composed, in consequence of their being imperfect conductors of heat.

Professor Ure, who adopts the latter opinion, criticises somewhat severely the former, and observes, that it is notorious, that some of those salts, which when absolutely dry, decrepitate most violently, contain no water whatever, and he instances, Sulphate of Barytes, Sulphate of Potass, and Muriate of Soda. Other mineral substances also, which decrepitate strongly with heat, contain no water; for instance, Fluor Spar, Glauberite, Chromate of Lead, Oxide of Tin, &c., and indeed, the greater portion of those minerals which are described by mineralogists as decrepitatory with heat, have no water set down in their respective analysis.

Although these facts are directly opposed to the opinion, that the presence of water is necessary in all, or even most cases, for the development of decrepitation, there are cases, it would seem, in which its mechanical suspension in the mineral *is* necessary, before this phenomenon can be elicited. I have, at this moment, before me a mineral (a description of which is given at page 389, vol. II, Transactions Literary and Historical Society of Quebec,) which appears to be a compact variety of either the Hydrate of Magnesia or Hydrate of Allumine, (Dr. Holmes, of Montreal, is of opinion, that it is a variety of Steatite). In a dry state it is slightly translucent on the edges, but being very hydrophanous, it becomes deeply so when absorbing water, in which state, upon being exposed to heat, either in the matrass or on charcoal before the blow-pipe, it decripitates violently; but, previously to the absorption of water, no such character belongs to it. It is further remarkable and corroborative of the opinion, that water is the cause of decrepitation, in this instance, that this character may be renewed, at pleasure, *in the same assay*, by only moistening it, previously to subjection to heat. This fact, however, is by no means opposed to Dr.

Ure's opinion as to the cause of decrepitation; because, it is highly probable, that the same mineral, which when dry, is a good conductor of heat, becomes the contrary when moist; and I believe, it will be found upon experiment, that other absorbent minerals which decrepitate when moist, lose that character upon becoming dry.

The phenomenon of decrepitation, is in general, best developed by directing the exterior flame of the blow pipe *suddenly* upon the assay, upon charcoal: but different decrepitating minerals require often different degrees of heat; for, while some exhibit this character, only in the reducing flame of the blow pipe, others, to do the same, must be submitted to the more moderate temperature of the candle or matrass; whatever the degree of heat be however, it should always be applied suddenly, for, some of those minerals not subject to this law, may be made not to discover it, if they be heated gradually, a mode often adopted, when the fusibility of a mineral is the subject of enquiry, in which case decrepitation is a very inconvenient character. In ascertaining, whether decrepitation be a character belonging to a mineral, several trials, under different circumstances, should be made, for instance: in the candle, in the matrass, in the outer flame, in the reducing flame; and, when the mineral under examination, is absorbent or hydrophanous, it should be tried in both a moist and in a dry state, and in the description the particulars should be stated. It is obvious useless to *continue* the experiment with a fusing heat, or after the assay is red-hot, at which stages all decrepitation ceases.

It must be well understood, that in presenting to the Society the following Tabular View of Minerals which Decrepitate with Heat, it is not meant to assume, that a mineral which does not, *cannot* belong to one of the several species which it embraces,

but only, that it *probably* does not; there are cases indeed, in which this probability almost amounts to a certainty; but the above general warning will not be the less necessary on that account. It must also be borne in mind, that the writer is not compiling a System of Mineralogy, but arranging a few minerals, under certain heads, principally as an *aide mémoire*, in doing which his main object, self improvement, will be realized, whatever opinion may be entertained of the general usefulness of his labours.

Wishing to have, as far is at was possible, an occular proof of the approximate accuracy of these Tables, I have experimentally consulted as many of the minerals mentioned in them as are to be met with in the Cabinet belonging to the Literary and Historical Society; at least, whenever the specimens would admit of it, without injury to them. With reference to these Tables and experiments, I have ventured to mark in the former, with an asterisk, those minerals in which decrepitation may be considered sufficiently striking and constant to be characteristic. This experimental part of my labour would have been more satisfactory had I possessed the opportunity of consulting a larger cabinet, and, I trust, that great allowance will be made for this, or any other attempt which may succeed it, to be useful, while is is considered, that neither minerals, books, nor men, are very readily consulted in a country just commencing its scientific flight.

As they may not be found devoid of interest, although their perfect accuracy I will not guarantee, the experiments alluded to above, are here introduced:—

SULPHATE OF BARYTES.

Of fourteen specimens of this mineral examined, twelve exhibited strong decrepitation. Of the two which failed one con-

sisted of acicular prismatic crystals—the other was a fibrously compact variety, from Monte Paterno, near Bologna, (Bolognian Stone). These in which this character was most striking were of a distinctly laminar or foliated structure.

CARBONATE OF BARYTES.

One specimen, (the only one tried) slightly.

SULPHATE OF STRONTIAN.

Not one of seven specimens tried (four of them crystallized) can be considered as having decrepitated; the slightest, almost imperceptible motion, in some of them was alone observed. May not the presence of the Sulphate of Barytes give this character to this mineral when it exists?

ARRAGONITE.

Three, of six assays from this mineral, decrepitated strongly. No signs of decrepitation in the others.

HYDRATE OF MAGNESIA AND MARMOLITE.

Two specimens were tried, from the locality of Hoboken, New Jersey, neither of which succeeded; the presence of moisture might alter the case however, as it does with the specimen alluded to in the early part of this paper, and which resembling the Marmolite in appearance, is also found, to hold the same geological position, forming thin layers and thick seams in the serpentine and talcose schist of the Gannanoqui.

BRONZITE AND HYPERSTENE.

Unsuccessful experiments.

FULLER'S EARTH.

Decrepitation remarkably strong but single—one specimen tried.

CRYOLITE AND ALUMSTONE.

No decrepitation in one assay of each—the fusibility, in-

deed, of the former is so great, that if ever it exhibits that character, and Berzelius stands alone as authority (first-rate however) that it does it must be at a very low temperature comparatively, as it melts in the flame of a candle.

The Metallic Minerals, submitted to experiment were the following, viz.:—

CARBONATE OF LEAD.

All, of six crystallized specimens, decrepitated strongly.

SULPHURET OF LEAD.

Only five, of ten assays, decrepitated; these did so, however, strongly—one was crystallized in cubes—two granular, and two massive (laminarly): those deficient in this character were, three, massive—one, granular (argentiferous)—and one, crystallized in octohedra.

MOLYBDATE OF LEAD.

The only two specimens tried decrepitated strongly; they were crystallized in flat octohedra (much flatter than the primary) and in very low right square prisms—Sheperd.

CHROMATE OF LEAD.

Also two specimens—strongly; both crystallized, one in rhombic prisms of 93° 30′ and 86° 30′—Sheperd.

PHOSPHATE OF LEAD.

Three, of four specimens decrepitated, two of them crystallized in six-sided prisms, and one in acicular and radiating crystals—the former strongly—the latter slightly. A brown Phosphate of Lead, in six-sided prisms, apparently corroded, did not decrepitate.

OXIDE OF TIN.

The only specimen tried (under the usual form of crystal) very strong.

SULPHURET OF ZINC.

Five, of six assays, all from crystallized specimens, decrepitated. The specimen in which this character was not observed is a fibrous blende.

ELECTRIC CALAMINE.

No decrepitation in the two specimens tried.

CARBONATE OF IRON.

Four, out of five, strongly; both crystallized and massive—the fifth was "in distinct crystals of the *primitive* form."—Sheperd. Among an equal number of primary and secondary crystals of the same decrepitating mineral would not the character appear more frequently in the latter than the former?

WOLFRAM

Three, out of four—two crystallized (laminarly) and one compact (the last most violently); the fourth was granular.

TUNGSTATE OF LIME.

One specimen (crystallized in octohedra) slightly—the only one tried.

COPPER PYRITES.

Four specimens tried, decripitated—three of them strongly (two crystallized, one compact); the fourth (botryoidal) slightly.

GREEN CARBONATE OF COPPER.

Of four specimens, the only crystallized one (a circumstance unusual) among them, did not decrepitate.

It will be found in general, that a mineral which decrepitates possesses either a crystallized form or a crystalline structure; most frequently. Among fibrous minerals the character is somewhat rare, and still more so among such as are of an earthy

texture. Fullers' earth is a striking exception to the latter assertion, but it must be remembered, that its texture is quite as compact as it is earthy, and an analagous observation may be made respecting the Green Carbonate of Copper, the structure of which is very compact as well as fibrous. Granular minerals often exhibit decrepitation, but they are obviously, in general, composed of an assemblage of small crystals—from all of which it appears, that in collecting an assay for examination in this particular character, the most crystalline portion of the mineral should be taken, and particularly such portion the structure of which is laminar.

In compiling this paper, all the works on the subject I could meet with have been consulted, viz.: Berzelius, Bakewell, Cleaveland, Griffin, Mohs, Jameson, and Phillips. A few, a very few, of the observations are original, at least, as far as the writer's information extends. Should the whole prove acceptable, his labours will be continued on the same plan. Among the distinguished works on Mineralogy just named, not one holds a higher place than Cleaveland's, at once remarkable for its fulness of detail, and for its perspicuity of style. It is a treatise I have always had recourse to in my mineralogical difficulties, and the student will find it, as I have, the Pharos, which if it do not always conduct to port, will, at least, save him from being wrecked upon the shoals and quicksands of the Science. If he be an American, two additional motives are his to possess it, as it is a work of which he may be justly proud, and the only one which offers him a compendium of the Mineralogy of his country.*

* C. U. Shepard, Esq., of Yale College, has subsequently, published a useful little Mineralogical Directory, by means of which the names of Minerals under examination may be more readily ascertained.

Number.	Name of Mineral, *form under which it usually occurs, and authority for decrepitation.*	Colour. In Mass.	Colour. Streak or Powder.	Lustre.	Structure.
1	*Sulphate of Barytes(violently)—All authorities—Crystallized and massive, crystals rhomboidal prisms.	White, Blue, Yellow, Grey, Red Brown.	Streak White.	Vitreous inclining to resinous.	Laminar fibrous granular compact
2	Carbonate of Barytes, Witherite (slightly). Jameson, Cleaveland, Griffin, Mohs,—Generally, amorphous, sometimes crystallized in six sided prisms terminated by six sided pyramids, also stalactitic.	White, Yellowish Grey.	Streak White.	Vitreous inclining to resinous.	Fibrous usually.
3	Sulphate of Strontian.—Celestine.—Griffin, Mohs.—Crystallized and massive. Crystals, rhomboidal prisms.	White, Grey, Blue, Reddish, Red.	Do.	Do. and somewhat pearly on the perfect faces	Laminar fibrous.
4	*Fluate of Lime,—Fluor Spar, (usually with violence)—All authorities. Generally crystallized in cubes or octohedrons, also massive.	White, Yellow, Blue, Green, Red.	Streak White.	Vitreous.	Laminar granular compact earthy.
5	Carbonate of Lime,—Calcareous Spar, (some varieties)—Crystallized, forms various, usually rhomboidal.	White, Grey, Red Green, Yellow.	Streak Greyish White.	Vitreous often pearly.	Laminar fibrous compact.
6	Do. Arragonite,—Cleaveland, "a small transparent fragment"—Mohs, "thin fragments of transparent crystals"—Bakewell,—Jameson, Crystallized in six sided prisms.	Do. and Blue.	Do.	Do.	Laminar fibrous compact.
7	Carbonate of Magnesia (*Compact*) Magnesite,—Griffin, "crackles"—Magnesite from Baudessero, crackles on charcoal, Berzelius.	Grey or Yellow.	Streak White and dull.	Dull.	Compact.
8	Hydrate of Magnesia,—Native Magnesia,—"crackles" Griffin. Massive and in regular hexahedral prisms.	White, inclining to Green.	Do. powder pure White.	Pearly upon the perfect faces.	Laminar.
9	*Diaspose (violently)-All authorities.—It decrepitates and is *dispersed* by the heat of a candle, whence its Grecian name,—Massive, rarely in doubly oblique prisms.	Greenish, Grey or Brown.		Vitreous and pearly.	Do

*Minerals marked with an asterisk have the character of decrepitation constant.

Sp.Gr.	Hardness	Fusibility by the blow-pipe on charcoal	Chemical Constituents.	Additional Remarks.
4.2 4.6	4 or 5 Fluor spar or Calc spar.	A white enamel with *difficulty*; of an hepatic flavor.	Baryta.....66-00 Sulp. acid. 34- 0 } Berthier, Fourcroy, Berzelius.	The enamel, formed by fusion on charcoal, communicates to the palate the flavor of rotten eggs. Varies from opaque to transparent,—when the latter, double refraction may be noticed.
4.2 4.4	4 or 5 Fluor spar or Calc spar.	A white enamel *easily*; transparent while hot.	Baryta. 73 Carbonic acid 22 } Klaproth.	Effervesces and disolves in the muriatic and nitric acids—opaque translucent to semi-transparent,—brittle, doubly refractive when sufficiently transparent.
3.5 4.0	4 or 5 Fluor spar or Calc spar.	A white enamel somewhat caustic.	Strontia 54 Sulp. acid 46 } Vauquelin. Strontia 58 Sulp. acid 42 } Klaproth.	Its powder phosphoresces on red hot iron—translucent to transparent—brittle. Its enamel digested in muriatic acid will give a rose-red colour to flame, but this is no distinctive character because all the carbonates of lime so treated will do the same.*
3.0 3.2	4 Fluor spar.	A greyish white glass.	Lime ... 67-75 Fluoric acid 32-25 } Klaproth. Lime .... 72-14 Fluoric acid 27-86 } Berzelius.	When its powder is digested in sulphuric acid and heated it gives out white fumes which corrode glass—phosphoresces on glowing charcoal, translucent to transparent,—brittle.
2.6 2.7	5 Calc spar	No; turns into a caustic lime.	Lime..... 57 Carbonic acid 43 } Vauquelin.	Burns to a caustic lime,—effervesces entirely dissolves in the muriatic and nitric acids,—translucent to transparent, when the latter doubly refractive.
2.9	4 Fluor.	No; Do. becomes opaque & friable in the flame of a candle	Lime 58-5. Carb. acid 41-5. Vauquelin and Fourcroy. It still forms a subject for conjecture why its chemical composition being so near that of calcareous spar. Aragonite should possess a different crystalline form.	Arragonite with the exception of its specific gravity and hardness, which is somewhat greater, does not differ from calcareous spar in any other respect than as to form, particularly that of the primary crystal.
2.7	5 or 6 Calc spar or Selenite	No; cracks and shrinks and becomes hard enough to scratch glass	Magnesia ....48 Carb. acid. . 52 } Bucholz. Magnesia ....48 Carb. acid....49 Water. . .. 3 } Klaproth.	Dissolves in sulphuric acid (sometimes with effervescence at others without) and by evaporation crystals of the sulphate of magnesia (epsom salts) are obtained. Adheres to the tongue—opaque.
2.1	6 and below Selenite or Talc.	No; loses transparency, and becomes friable and opaque.	Magnesia 70-00 Water. 30-00 } Bruce. Magnesia 69-75 Water 30-25 } Fyfe.	Dissolves entirely in the mineral acids without effervescence and affords by evaporation crystals of epsom salts—semi-transparent to transparent,—thin lumina—flexible.
3.4	3 or 4 apatite or Fluor.	No.	Alumina.....80-0 Protox of iron. 3-0 Water. .....17-3 } Vauquelin. Alumina....76-06 Protox of iron 7-78 Water . .....4-70 } Children.	Translucent on the edges.

*So indeed would any other mineral if it should happen to contain a little carbonate of lime, even the enamel of a sulphate of baryte containing lime would do the same. See Silliman's Journal, Vol. 18, p. 264.

Number.	Name of Mineral, *form under which it usually occurs, and authority for decrepitation.*	Colour. In Mass.	Colour. Streak or Powder.	Lustre.	Structure
10	Calaite—Oriental Turquoise—Berzelius. In masses varying from the size of a nut to that of a goose's egg; reniform, botryoidal and mamillary.	Blue or Green.	Streak White.	Resinous.	Compact
11	Bronzite.—Diallage, Metalloide, Schiller Spar. Crackles a little in the matrass,—Berzelius, Griffin. Massive or imbeded.	Green, Brown, Grey.	Streak yellowish or greyish White.	Semi-metallic often like bronze and pearly.	Laminar Fibrous.
12	Hyperstene, do. Labrador Hornblende. Crackles in the matrass—Griffin. Massive or imbeded.	Greyish or Greenish Black.	Greenish Grey Streak.	Do. do. sometimes coppery.	Laminar.
13	Fullers' Earth,—Berzelius,—Griffin. Occurs massive.	Green, Grey, White.	Streak similar shining resinous.	Dull, Glimmering.	Compact earthy.
14	Precious Opal,—Cleaveland,—Phillips. Disseminated in nodules.	Milky, White RF pale orange TF	Streak White.	Vitreous sometimes Resinous.	Compact.
15	Gadolinite,—Griffin,—Cleaveland,—Mohs,—Bakewell. Massive and crystallized.	Velvet blk. Greenish or Brownish black.	Streak greenish Grey.	Vitreous inclining to resinous.	Compact.
16	Flint—Cleaveland.	Various shades of grey, yellow, black	Streak White.	Vitreous but feeble.	Compact rarely laminar.
17	Fluate of Soda and Allumine, Cryolite,—Berzelius says, that from Greenland, decrepitates in the matrass. Massive.	White, Brown, Red.	Do.	Vitreous and slightly pearly.	Perfectly laminar.
18	Alumstone—Griffin,—Massive and crystallized; the crystals are rhomboidal.	White, Red, rarely Grey.	Do.	Do.	Compact or fine-grained.
19	Marmolite,—Nuttall. Prismatic.	Pale Green and Grey.		Pearly inclining to metallic.	Laminar.
20	Somervillite,—Brooke. Pyramidal.	Pale, Dull, Yellow.		Dull.	
21	Mesotine Spar,—Breithaup.	Dark Greyish, Yellowish White.	Streak White.	Vitreous.	Laminar?

Sp. Gr.	Hardness	Fusibility by the blow-pipe on charcoal	Chemical Constituents.	Additional Remarks.
2·6 3·2	2 Felspar.	No; turns brown in R. F. and colours the flame green	Alumina,..... 73·0 Water, ... 18·0 Oxide of Copper 4·5 Oxide of Iron;.. 4·0 John.	The acids have no action upon it. Feebly translucent on the edges to opaque—Fracture conchoidal—Not crystallized.
3·0 3·4	3 or 4 Apatite or Fluor.	No; assumes a lighter colour.	Silica,..... 0·60 Magnesia,.... 27·50 Oxide of Iron, 10·50 Water,..... 0·50 Klaproth.	Translucent more or less.
3·3 3·4	2 or 3 Felspar or Apatite.	Grecnish grey, opaque, globule.	Silica,....54·25 | Magnesia,14·00 Alumina,.. 2 25 | Lime,....1·50 Oxide Iron.24·50 | Water, ..1 ·0 Klaproth.	Some mineralogists describe this mineral as infusible mistaking it probably for the foregoing—opaque or nearly so—brittle.
1·7 2·2	6 or below Selenite or Salt.	With difficulty a white blebby glass.	Silica,.....53·0 | Alum,.... 10·0 Water,.... 24·0 | Magnesia, 1·25 Lime, ... 0·5 | Mur.of Soda0 ·1 Oxide of iron 9·75—Klaproth.	If thrown into water it forms a paste, which is not plastic, *absorbs oil and fat*, perfectly sectile—unctuous—opaque or nearly so, but becomes semi transpt. in water; falls to pieces.
2·1	2 Felspar.	No; turns opaque white.	Silica,... .90 Water,....10 Klaproth.	Highly translucent-hydrophanous and remarkable for the beautiful play of irised colours it exhibits by varying the incidence of light—brittle.
4·2	1 or 2 Quartz or Felspar.	No; except in very small splinters.	Ytria,..... 45·00 Protox of Iron, 11·43 Protox of Cerium, 17·92 Silica,..... 25·10 Berzelius.	In nitric acid it loses its colour and is converted into a jelly—frequently magnetic—almost opaque.
2·6	1 & above Quartz or scratches Quartz.	No; turns white and opaque.	Silica,. ..... 98·00 Lime,..... 0· 5 Alumina, ... 0·25 Ox.of iron,..... 0·25 Water,.....1 ·0 Klaproth.	Brittle when first taken from its bed in "upper chalk" of which it is characteristic—translucent on the edges or in thin portions—conchoidal fracture—fragments splintery and sharp.
2·9 3·0	5 or 6 Calc spar or selenite	Easy; even by the flame of a candle.	Alumina, 21· 0 Soda,.. 32· 0 Flu. acid, & Water.. 47· 0 Klaproth 24·0 36 0 40·0 Vauquelin	It dissolves like *ice* before the blow-pipe whence its name, and subsequently becomes hard and slaggy—very hydrophanous—semi-transparent to translucent.
2·4 2·7	3 to 6 Apatite to Selenite.	No; emits a slight odor of sulphur.	Sulp. acid,.... 35 495 Alumina,..... 39·654 Potash,..... 10 021 Water and loss, 14·350 Cordier.	After roasting it imparts to the palate the flavour of alum—translucent to transparent—brittle.
2·47	5 or 6 Calc spar or selenite	No; hardens and splits into lamina.	Magnesia, 46·0 | Silica,..36·0 Lime,.... 2·0 | Water, . 15·0 Ox. of iron and Chrome... 0·5 Nuttall	Resembles chlorite. It forms with nitric acid a thick partly gelatinous mass—brittle—occurs in serpentine.
	Below Garnet.	Grey, globule.	Not analysed.	
3·34 3·37	Fluor.	No ?	It contains probably Magnesia, Lime, Protox. of iron and Oxide of Manganese.	In muriatic and nitric acid a feeble effervescence takes place but it is entirely soluble

NAME OF MINERAL, *form under which it usually occurs, and authority for decrepitation.*	COLOURS.		Lustre.	Structure	Sp. Gr.
	In Mass.	Streak or Powder.			
*Sulphuretted antimonial silver, Red silver. Cleaveland, Mohs, Phillips, Griffin, Bakewell.—Crystallized, dendritic, massive, micaceous.	Red, LeadGrey IronBlack	Always Red.	High sometimes Semi Metallic.	Laminar imperfect.	5·2 5·8
Argento Antimonial Sulphuret of Lead,—White silver.—Weissgaltegerty, Berzelius. Occurs massive and disseminated.	LeadGrey inclining to black sometimes light coloured.	Streak Similar.	Metallic.	Fibrous.	5·3 5.6
*Sulphate of Lead,—Griffin, Mohs, Phillips, Jameson. Occurs crystallized commonly in rhombic prisms with dihedral terminations; also in octohedrons.	White, Yellowish Greyish, Greenish.	Streak White.	N. M. but adamantine passing into vitreous or resinous.	Perfectly Laminar.	6·2 6·3
*Carbonate of Lead.—All authorities. Occurs in tabular crystals, in six sided prisms variously terminated and in macled crystals of different forms.	White, Grey, Brown, Black.	Streak White.	N.M. but adamantine passing into resinous.	Laminar more or less distinctly.	5·7 7·2
*Sulphate of Lead.—Galena. (violently).—Cleaveland, Griffin, Phillips, Jameson. Crystallized in cubes or octohedrons; also amorphous.	Lead Grey.	Streak Similar.	Metallic.	Laminar granular compact fibrous.	7·0 7·6
*Molybdate of Lead, (briskly). All authorities. Crystallized in flattish acute octohedrons; rarely massive.	Yellow, Yellowish Grey, Greenish and GreyishWhite.	Streak White.	Non Metallic, Waxy.	Perfectly Laminar.	5·1 6·8
*Chromate of Lead,—Berzelius, Griffin, Mohs, Phillips, Jameson. Crystallized and massive.	Red and Yellow.	Streak Orange Yellow.	Non Metallic, adamantine.	Laminar.	5·7 6·1
*Aluminous oxide of Lead. Plomb-gomme, (violently.)—Cleveland, Mohs, Phillips, Berzelius. In mamillary small masses.	Yellowish Reddish, Brown.	Yellow ?	Non Metallic.	Laminar concentrically.	Heavy.
*Triple Sulphate of Lead—Bournonite,—Griffin, Phillips, Bakewell, crystallized in rectangular prisms variously modified.	SteelGrey Lead Grey, Iron Grey.	Streak Similar.	Metallic.	Perfectly Laminar.	5·5 5·8

Fusibility by the blow-pipe on charcoal.	Hardness	Chemical Constituents.	Additional Characters.
Melts into a bead of silver exhaling sulphureous, and antimonial vapours.	6 Selenite.	Silver,.....58·949 Antimony,.....22·846 Sulphur,.....16·609 Earthy substances, 0·299 Bonsdorf	Frequently burns with a bluish flame—soluble in dilute nitric acid. Opaque to semi-transparent—sectile.
Melts into a scoria of impure silver exhaling copious white vapours of a sulphureous odor	6 Selenite.	Silver 20·40, Lead 43·06, Antimony 7·83, Iron 2·25, Sulphur 12·25, Alum 7·0, Silex 0·25; again a dark coloured variety, Lead 41·0, Ant. 21·5, Sil. 9·25, Sulp. 22·0, Iron 1·75, Al. & Silex 1·75.—Klaproth.	Soluble in dilute nitric acid.—brittle—sectile.
Easy into a white slag.	5 or 6 Calc spar or Selenite.	Ox. of Lead ..... 72·47 Sulp. acid.....26·09 Water,.....0·12 Hydrous oxide of Iron...0·09 Oxide of Manganese,....0·06 Silica, &c.....0·51 Stromeyer.	In O. F. on charcoal fuses into a transparent glass which becomes opaque on cooling—in R. F. effervesces and a particle of lead is obtained. —brittle,—translucent to transparent, usually in crystals.
Fuses into a bead of lead but previously becomes yellow or red.	4 to 6 Fluor spar to Selenite.	Oxide of Lead, 82·0 Carbonic Acid, 16·0 Water, ... 2·0 Klaproth.	Soluble with effervescence in the nitric and muriatic acids—translucent to transparent when the latter doubly refractive in a high degree—brittle—powder phosphosescent on ignited charcoal.
Fuses easily into a bead of lead at the same time exhaling the odor of sulphur.	5 or 6 Calc spar or Selenite.	Lead,....85·13 Sulphur,..13·02 Iron,..... 0·50 Thomsom.	Brittle in the laminar varieties readily breaking into little cubes or cuboidal fragments. Partly soluble in nitric acid and leaves a white residue.
Into a dark greyish mass which sinks into the charcoal leaving particles of reduced lead.	5 or 6 Calc spar or Selenite.	Ox. of Lead,.64·42..58·40 Molybdic acid34·25..38·00 Ox. of Iron..00·00.. 2·08 Silica,.....00·00.. 0·28 Klaproth and Hatchett.	Soluble in hot nitric acid without effervescence.—Translucent on the edges to semi-transparent,—brittle.
Blackens and fuses into a dark slag containing globules of lead.	5 or 6 Calc spar or Selenite.	Oxide of Lead,....68·00 Chromic Acid,....32·00 Peaff.	Communicates in the course of a few hours a green tinge to muriatic acid.—To borax it also gives a green tinge—translucent to transparent sectile—soluble in nitric acid with effervescence.
No: becomes white and opaque.	Fluor spar or Calc spar	Oxide of Lead,.....40·14 Alumina,.....37·00 Water,.....18·80 Sulphurous acid,..... 0·20 Lime & the oxide of Iron and manganese,..... 1·80 Silica,.....0·60 Berzelius.	Melts with borax into a colourless transparent glass; the presence of nitre is necessary to reduce the lead—translucent—resembles hyalite or mullers glass.
Melts with sulphureous vapours into a crust of lead containing copper	Calcareous spar or Selenite.	Antimony,....28·50....19·75 Lead,..... ..39·00....42·50 Copper,..... 13·50....11·75 Iron,..... 1·00.... 5·00 Sulphur,.....16.00. ..18·00	Easily soluble in heated nitric acid —very brittle—soils—sectile—bluish phosphorescence on ignited charcoal.

	Name of Mineral, *form under which it usually occurs, and authority for decrepitation.*	Colour. In Mass.	Colour. Streak or Powder.	Lustre.	Structure	Sp.
0	*Phospate of Lead, (usually)—Phillips, Griffin, Jameson. Crystallized in six sided prisms generally modified in the edges; also botroyidal reniform and massive.	Green, Yellow, Grey, Brown.	Streak White, sometimes pale Brown, powder greyish White.	Non Metallic, Resinous.	Laminar.	6·2 7·2
1	*Oxide of Tin,—Tin Stone.—Cleaveland, Griffin, Phillips, Jameson.—Crystallized in quadrangular prisms terminated by four sided pyramids, rarely massive.	White, Grey, Yellow, Red, Brown, Black.	Streak White, powder Greenish White,	Non Metallic, Adamantine.	Laminar	6·3 7·0
2	*Sulphuret of Zinc,—Blende,—Berzelius, Cleaveland, Griffin, Phillips, Jameson.—Crystallized and amorphous or massive; the forms of its crystals are very numerous,—tetrahedral, rhomboidal, octohedral, dodecahedral.	Green, Red, Yellow, Brown, Black, Hone bright.	Streak White, powdow Grey.	N. M. Splendent Adamantine, vitreous, resinous, S. M.	Laminar.	3·7 4·2
3	Siliceous oxide of Zinc.—Electric Calamine,—Berzelius, Griffin, Phillips, Mohs, (slightly.) Occurs crystallized stalactic mamillated, botryoidal and massive, the forms of its crystals are various among the common are a six sided prism, a four sided table, the octohedron is also met with.	White, Blue, Green, Yellow, Brown.	Streak White.	Non Metallic, Vitreous inclining to pearly.	Laminar. Compact.	3·3 3·5
4	Carbonate of Manganese.—Berzelius, Griffin, Mohs, (violently.)—Occurs massive.	Rose Red, inclining to Brown.	Streak White.	Non Metallic, Vitreous inclining to pearly.	Laminar.	2·8 3·5
5	Oxide of Antimony.—White Antimony,—Cleaveland, (sometimes.) Crystallized in tabular and acicular crystals, in diverging groups; more rarely massive.	White, Red, Grey.	Streak White.	Non Metallic, Admantine pearly.	Laminar.	5·0 5·6
6	*Carbonate of Iron.—Sparry iron ore.—Berzelius, Griffin,—some species violently. Crystallized in obtuse and acute rhomboids, in six sided prisms, in octohedrons, in lenticular crystals, also massive.	White, Yellow, Brown, Black.	Streak White.	Non Metallic, Vitreous inclining to pearly.	Laminar compact fibrous.	3·6 4·0

Hardness	Fusibility by the Blow-pipe on Charcoal.	Chemical Constituents.	Additional Characters.
Fluor spar or Calc spar.	Into a dark globule of a polyhedral form.	Ox. of Lead,..73·58..78·40 Phosp. acid,..19·73..18·37 Muriatic acid,. 1·65.. 1·70 Ox. of Iron,... 0·00.. 0·10 } Klaproth.	Dissolves in acids without effervescence. Reduced to the metallic state with borax—translucent on the edges to semi transparent—brittle.
Quartz or Felspar.	Nearly infusible.	Klaproth. Desatils. Ox. of Tin, 99 00.....95·00 Ox. of Iron, 0·25..... 5·00 Silica,.... 0·75..... 0·00 }	Insoluble in acids—usually crystallized—semi transparent to opaque and transparent.
Apatite to Calc spar.	No; exhales a slight odor of sulphur but does not fuse even with borax.	Thompson. Gueniveau. Zinc,....59·09... ..62·00 Iron, ...12·05.... .. 1·50 Sulphur,..28·86.....34 00 }	Its powder in nitric acid exhales the odor of sulphuretted hydrogen and dissolves—translucent to transparent—brittle.
Felspar or Apatite.	No; loses transparency and whitens emiting a green phosphorescent light.	Berthier. Berzelius. Ox. of Zinc,...66·00.....66·37 Silica,. ....25·00 .. ..26·23 Water,..... 9·00..... 7·40	Forms with borax a globule clear and glassy which becomes opaque in cooling. Its powder gelatinized in heated sulphuric or muriatic acid—phosphorescent by friction—brittle—translucent to transparent.
Fluor spar to Selenite.	No; blackens.	Ox. of Manganese, 54·60 Carbonic acid,.... 33·75 Ox. of Iron,..... 1·87 Silica,. ..... 4·37 Lime,..... 2·50 } DuMenil.	Effervesces with the mineral acids and communicates to borax an amethystine tinge—brittle—translucent more or less.
Calc spar to Selenite.	Entirely volatalized, leaving a white coating.	Ox. of Antimony,.86·00 Do. Iron,.... 3·30 Silica,..... 8·00 } Vanquelin	It melts in the flame of a candle, sectile brittle—translucent to semi-transparent soluble in nitro-muriatic acid.
Calc spar to Apatite.	No; blackens and becomes magnetic.	Protox of Iron, 63·75. 57·50 Carbonic acid, 34 00..36·00 Ox. of Mangan. 0 75.. 3·30 Lime,..... . 0·00.. 1·25 Magnesia,..... 0·52.. ·000 } Klaproth.	Dissolves slowly in nitric acid with slight effervescence—brittle more or less translucent, suffers spontaneous decomposition its surface bleachening in the atmosphere—colours borax green.

Number	Name of Mineral, *form under which it usually occurs, and authority for decrepitation.*	Colour. In Mass.	Colour. Streak or Powder.	Lustre.	Structure	Sp. G.
7	Phosphate of Iron. Vivianite, Mohs. Crystallized in right oblique angled prisms often small aggregated and divergent, also earthy.	Blue, Green, Grey.	Streak Bluish White, changing to indigo blue, dry powder, liver Brown.	Non Metallic, pearly almost Metallic.	Laminar earthy powdery.	2·6 3·0
8	*Tungstate of Iron—Ferruginous oxide of Tungsten.—Wolfram,—all authorities. In prismatic or tabular crystals also in octohedrons and massive.	Dark Greyish or Brownish Black.	Streak dark Reddish Brown.	Non Metallic, adamantine or imperfect Metallic.	Laminar	6·4 7·4
19	Tungstate of Lime —Calcareous oxide of Tungsten,—Griffin, Phillips, Jameson,—"crackles." In octohedral crystals, also amorphous.	White, Yellowish, Grey, Reddish, Brown.	Streak White.	Non Metallic, Vitreous inclining to adamantine.	Laminar. or often imperfectly.	5·5 6·1
20	*Pyritous Copper,—Cleaveland. Copper Pyrites,—Phillips, Cleaveland, Jameson. In tetrahedral crystals, also stalactitic, botryoidal, mamillated and amorphous.	Brass Yellow.	Streak Greenish Black, a little Shining.	Metallic.	Laminar granular	4·2 4·3
21	Grey Copper,—Cleaveland. Fahlerz,—Phillips, Cleaveland, Griffin, Jameson. In tetrahedral crystals; also massive and disseminated.	Steelgrey Iron Black.	Streak similar sometimes Brownish.	Do.	?	4·4 5·4
22	*Green Carbonate of Copper, Green Malachite,—Cleaveland, Griffin, Mohs, Jameson. In prismatic macled crystals but usually massive botryoidal, reniform stalactitic and cellular.	Green.	Streak similar and paler.	Non Metallic, shining silky or pearly.	Compact, fibrous passing into each other.	3·5 4·0

Hardness	Fusibility by the Blow-pipe on Charcoal.	Chemical Constituents.	Additional Remarks.
Calc spar to Talc.	Becomes yellowish and melts into a magnetic globule of metallic lustre with intumescence.	Klaproth. Bogel. Protox of Iron, 47·50 41·00 Phos. acid,....32·00 26·40 Water,.....20·00 31 00 Friable. Crystallized	Soluble in dilute sulphuric and nitric acids—translucent to transparent. In thin laminar perfectly flexible—sectile.
Felspar or Apatite.	Melts in a strong heat into a scoriaceous globule of metallic lustre which does not affect the needle	Tungstic acid,..... 78·77 Protox of Manganese,.. 6·22 Do of Iron,..... 18·32 Silica,..... 1·25 Berzelius	In the nitric and muriatic acids its powder becomes yellow—opaque.
Fluor spar or Calc spar.	No ; becomes opaque.	Tungstic acid, 80·42 or Oxide of Scheelium. Lime,..... 19·40 Berzelius.	Turns yellow in nitric acid with borax forms a colourless glass translucent to semi transparent—brittle.
Do.	Melts into a globule which after much roasting becomes magnetic.	Copper,. .....30 00 Iron,.....32·20 Sulphur,.....35·16 R. Phillips Earthy matter.... 0 50 Lead arsenic & loss 2·14	Before fusion it becomes black which changes to red upon cooling. Partly dissolves in dilute nitric acid to which it communicates a green colour.
Apatite to Fluor.	Melts into a greyish metallic globule.	In this species, Klaproth found Copper from 48·0 to 25 5, Iron 27 to 3·25, Sulphur 28 to 10, Arsenic 24 to 0, Silver 14·77 to 0, Antimony 1·5 to 0 besides a little zinc and mercury in some of the specimens.	Rather brittle.
Fluor to Calc spar	Nearly infusible blackens.	Perox of Copper,..72·2 Carbonic acid,....18·5 R. Phillips Water,..... 9 3	Yields to borax a green colour and a bead of copper, soluble without residue and with effervescence in nitric acid to which it gives a green colour—translucent more or less—brittle—it gives a green tinge to the flame of burning bodies.

NAME OF MINERAL, *form under which it usually occurs, and authority for decrepitation.*	COLOURS. In Mass.	COLOURS. Streak or Powder.	Lustre.	Structure	Sp. Gr.
Dioptase—Emerald Copper—Cleaveland, Mohs. This mineral is rare and has not been observed under any other form than that of six sided prisms terminated by a three sided pyramid or elongated rhombic dodecahedron.	Green.	Streak Similar.	Non Metallic, Vitreous inclining to Resinous.	Laminar.	3·2 3·3
*Arseniate of Copper, (foliated) Copper Mica,—Cleaveland, Griffin, Mohs, Phillips, Jameson. In six sided tabular crystals of which the lateral planes are trapeziums.	Green.	Streak Similar.	Non Metallic, often Semi Metallic.	Laminar.	2·5
Tennantite, (slight)—Mohs, Phillips, Griffin, Jameson. In crystals having the form of the rhombic dodecahedron, the cube and octohedron; rarely massive.	Blackish, LeadGrey TinWhite externally.	Streak Reddish, Grey, Powder do.	Metallic.	Do. imperfectly.	4·3 4·4
*Green Oxide of Uranium—Uranite,-Cleaveland, Griffin, Phillips, Bakewell, Jameson. Crystallized in quadrangular prisms, in four, six and eight sided tables, rarely in acute and obtuse octohedrons.	Yellow, Brown, Green.	Streak Similar.	Non Metallic, Shining.	Laminar.	3·1 3·3
Yttrious Oxide of Columbium,—Phillips, Mohs, Jameson. In rhombic prisms and in angular pieces sometimes as large as a hazle nut.	Green, Black, Brown.	Streak and powder Grey.	Somewhat Metallic occasionally.	Compact.	5·1 5·8
Arsenical Bismuth,—Mohs. In globular forms.	Dark hair Brown.		Non Metallic, resinous.		Heavy.

Hardness	Fusibility by the blow-pipe on charcoal.	Chemical Constituents.	Additional Characters.
Apatite or Fluor spar.	No; Blackens in Outward Flame, reddens in Reducing Flame.	Lowitz. Vauquelin. Ox. of Copper,.. .55·00....25·57 Carbonate of Lime,. 0·00....42·85 Silver,.....33·00....28·57 Water, ...12·00.... 0·00	Gives a green colour to the flame of the blow-pipe, and to borax, in the latter of which it readily dissolves. Soluble without effervescence in muriatic acid,—translucent to transparent.
Calc spar or Selenite.	Melts first into a black spongy scoria and afterwards into a black globule, during which process it exhales the odor of arsenic	Vauquelin. Chenevix. Oxide of Copper,..39·00..58·00 Arsenic acid,.....43·00..21·00 Water,.. .....17·00..21·00	Dissolves in nitric acid, without effervescence affording a greenish solution,—translucent to transparent, sectile.
Felspar or Apatite.	Burning with a blue flame and emitting copious arsenic vapours, it melts into a black magnetic scoria.	Copper,....45·32 Iron,..... 9·26 Sulphur,....28.74 Arsenic,....11·84 Silica,..... 5·00 } R. Phillips.	Brittle.
Calc spar.	No; acquires a brassy colour; gives a yellowish green colour to borax.	Oxide of Uranium,.....60·00 Oxide of Copper,..... 9·00 Phos. acid, ...15·30 Water,... .. ..13·80 Silex,..... ..... 0· 5 Loss,..... ..... 1· 4	Soluble without effervescence in nitric acid, (Phillips says with) affording a solution of a yellow colour —Translucent on the edges to transparent,—sectile, brittle its laminæ not flexible like mica which it resembles.
Felspar.	It melts but not easily into a greenish yellow slag. Phillips.	Black. Yellow. Ox. of Tantalium, 57.00 59.50 60. 1 Yttria,..... 20·25 24·90 29· 8 Lime,.. ...... 6·25 3·29 0· 5 Ox. of Uranium,. 0 50 8·23 6· 6 Tan-acid with tin,9·25pure1·25 1·04 Ox of Iron,..... 3·50 2·72 1·15 Berzelius.	Griffin, Cleaveland and Mohs, consider this mineral infusible, but describe it as acquiring a lighter colour before the blow-pipe.
Calc spar.	Emitting the odor of arsenic, it melts into a glass	Nothing is known of the chemical analysis of this Mineral; and we are even deficient in information as to its physical characters? ?	

Number.	Name of Mineral, *form under which it usually occurs, and authority for decrepitation.*	Colours. In Mass.	Colours. Streak or Powder.	Lustre.	Structure	Sp. Gr.
1	*Glanberite, Brithyne Salt,—Griffin, Mohs, Phillips. All authorities—Crystallized in oblique flat rhomboidal prisms; also massive.	Yellowish or Greenish White.	Streak White.	Vitreous.	Laminar.	2·7 2·8
2	*Muriate of Soda, common Salt†. All authorities. Occursmassive and crystallized in the form of the cube and octohedron.	White, Yellow, Red, Ash Grey	Streak White.	Do.	Do. obscurely.	2·2 2·5

Combustible Materials which

1	Dysodile "a crackling noise,"—Griffin, Phillips. Occurs massive.	Yellow, Grey, Greenish.		Glimmering and Resinous.	Lamellar Compact.	1·1 1·5
2	Candle Coal, Cannel Coal, Parrot Coal,—Griffin, Cleaveland, Phillips. Occurs massive.	Greyish Black.			Slaty in the large, compact in the small.	1·2 1·3

†See Silliman's Journal, Vol. 19. p. 198, for a curious instance of decrepitation.

N. B.—The Nitrate of Potash, (saltpetre,) detonates on charcoal with heat, but does not decrepitate; the phenomena cannot be mistaken

Hardness	Fusibility by the Blow-pipe on Charcoal.	Chemical Constituents.	Additional Characters.
Calc spar or Selenite	Melts into a white enamel.	Sulphate of Lime,49·0 Do. of Soda,·51·0 } Brongniart.	If immersed in water it loses it transparency and is partly dissolved the same even occurs in a moist atmosphere—translucent to transparent—brittle—taste saline and astringent.
Selenite.	Melts disengages fumes and is absorbed.	Muriate of Soda,....983·25 Sulphate of Lime,... 6·50 Muriate of Mag.... 0·19 Muriate of Lime,... 0·06 Undissolved Matter,. 10·00 } Henry.	Deliquesces in the atmosphere and entirely dissolves in water—taste well known.

decrepitate with Heat.

Selenite ?	No; burns with a considerable flame, and smoke leaving a residue of nearly half its weight.	Not analyzed !	While burning it exhales a fœtor insupportably disagreeable—macerated in water it becomes translucent and flexible—brittle—exhales an argillaceous odor when moistened.
Calc spar	No; burns with a bright flame.	Carbon.... ....64·7 Hydrogen.....21·6 Nitrogen.....13·7 } Thompson.	Its odor while burning is not unpleasant—brittle.

*** The preceding Tables were intended to be the first of a Series, embracing the leading characteristics of Minerals, arranged in a similar manner;—the value of such a Guide to the Student of Mineralogy has already been touched upon. Unfortunately, however, CAPTAIN BADDELEY was called from Quebec, before he could carry his intentions fully into execution—and the increasing claims of duty, consequent on the distracted state of the Province, during some years, and his subsequent departure, for India, put it out of his power to resume his work. The SOCIETY have, however, deemed it right to give these Tables a place in their TRANSACTIONS, both from their intrinsic value, as far as they go, and as the latest Work of one, who, while in the Province, laboured long and zealously in the field of Canadian Geology and Mineralogy, as the preceding Volumes of their "Transactions" amply testify.

Article 11.—Notes on Ungava Bay and its vicinity. *By* W. H. A. Davies, Esq.

[Read, 3rd December, 1842.]

The southern side of Hudson's Straits, commencing at Cape Chudleigh, one of the points that form its eastern entrance, is indented by an extensive bay, known by the name of Ungava —it is of very considerable size—the shores measuring upwards of 400 miles in circuit—Cape Chudleigh, forming its eastern point, in in Lat. 60° 14′ and Long. 65° 20′ West, and the Cape of Hope's Advance, which may be called its western extremity, is in Lat. 61° 17′. Long. 70° 20′. The mouth of Whale River, which is situated about the centre of the bottom of the Bay, is in Lat. 58° 30′, Long. 60° 38′. This extensive sheet of water is free from islands, except near the shores where they are very numerous, and the large Islands of Akpatok occupying a prominent position in the centre of the Bay, and adding greatly to the danger of its navigation—the position assigned to this islands, even in the latest and best maps is very erroneous; this remark may, indeed, be applied to almost every part of the Bay; the shores having been laid down from the sketches made by the Moravian Missionaries, in 1811, while sailing along them in a rapid manner and at some distance from the land.

The coast-line of the Bay is not much indented by minor bays; the only one of any consequence, is that called the Bay

of Hope's Advance, whose limits have not yet been ascertained.

The navigation of this inlet is rendered peculiarly difficult and dangerous by the great violence of the currents, which run in many places with the velocity of a rapid, and are aided by the strength of a tide that rises upwards of 60 feet perpendicular; presenting, in this respect, a great contrast to the coast fronting the Atlantic, where the rise seldom exceeds eight feet. This difference may be accounted for by the fact, that this Bay, lying at the mouth of the Straits, and being open to the north, the strong current which is known to set out of Davis's Straits, along the the Coast of Labrador, sweeping round Resolution Is'and, rushes directly into Ungava Bay, from whence is has no outlet; causing this prodigious rise of the tides, and the numerous eddies and currents that are met with in every part of the Bay. The vast quantities of ice, also that encumber the Bay, until a late period of the summer, may likewise be traced to this cause; the constant current setting into the Bay preventing the egress of the ice, until a gale of wind of sufficient force and duration, springs up from the southward, and enables the masses of ice to stem the current, and they are driven into the Straits, where meeting with the current that pours through them they are carried into the Atlantic. It is, therefore, late in August before the Bay can be said to be navigable with any safety by vessels from sea; and, by the end of September the navigation is again very dangerous—not however, so much from the ice, as from the length and darkness of nights, and the fury of the wind, blowing almost constantly from the northward at this season of the year.

RIVERS.

The rivers, falling into the Bay, are the Koksoak or South River, the Kangerluksoak or George's River, Whale River, False River, and a few other insignificant streams.

Of these, South River is the most considerable, and appears to drain a much greater extent of country than the other. This river has its source in Lake Caniapuscaw, a large body of water situated on the height of land, separating the waters flowing into the Gulf of St. Lawrence from those falling into Hudson's Bay and Straits. From its source to the small outpost, called South-River House, a distance of about 250 miles, very little is known of its course, as it has only been once visited by the Whites, and then only a part of its course was seen—it is described as a very rapid and turbulent stream, flowing through a wooded country for the most part. At South-River House it receives the waters of the Washquash River, which is the route of communication with Esquimaux Bay—from thence to the sea, a distance of 150 miles, the current, though strong, is less broken by rapids; it also widens very much, and at the junction of the Natwacomo River, 90 miles above its mouth, it spreads out to upwards of a mile in breadth, flowing between high rocky banks, thirly clothed with trees—it gradually increases in size, until it reaches the Bay, where it is nearly a league in width—28 miles above its entrance stands Fort Chimo, the head-quarters of the District, until the past summer. It is navigable for vessels of 200 to 300 tons as far as this Post, and from thence to the mouth of the Natwacomo by schooners; above this river it is only navigable for canoes and small barges.

The next river in size is that called, by the Whites, George's River, and by the Esquimaux, Kangerluksoak—it falls into the Bay in Lat. 59° 4′, Long. 66° 31′, about 130 miles to the southward of Cape Chudleigh, about 80 miles to the eastward of South-River. It was first discovered by the Moravian Missionaries, in their Exploring Voyage to Ungava Bay, in 1811. They merely visited the entrance, where they

appear to have been struck with the beauty of the country, clothed with trees and shrubs, contrasting so strongly with the barrenness of their homes, on the Atlantic Coast of Labrador. It was not again visited by Europeans until 1839, when it was ascended by a party for the purpose of forming an establishment near its source. It was found to be a considerable stream, for the first 220 miles of its course, running with an extremely rapid current, between rocky banks; but, though full of rapids, the water was deep enough for barges; as they increased their distance from the coast, the country became more wooded, and the trees of a larger size. At a little more than 200 miles from the coast, they reached an extensive lake, abounding in fish, where the Post was ultimately established—above this lake, the river became much smaller, flowing through numerous shallow lakes of inconsiderable size, until the height of land was reached about 240 miles above the large lake. The country, above the lake was found to be almost denuded of wood, but less mountainous than nearer the coast. The general course of the river is directly north, with very few windings, running nearly parallel to the Atlantic Coast of Labrador from whence it is at no time more than 100 miles distant, and often much nearer; from this cause it has few or no tributaries.

Whale River empties itself into the Bay, about 30 miles to the eastward of South-River. It is rather a large stream at its entrance, but quickly contracts in size—it is navigable for about 60 miles, without a portage—its source is in small lakes and marshes, about 200 miles from the shores of the Bay. It is not used by the Whites as a means of communication with any part of the country, and is seldom frequented. The country through which it flows is mountaineous and thinly wooded.

False River is only remarkable as emptying itself into the

Bay exactly at the mouth of South River, and presenting a wide opening, is generally mistaken, by strangers, for South-River; and has in consequence, nearly caused the loss of every vessel going to Fort Chimo, the entrance of the River being very dangerous from shoals and rocks.

LAKES

The Lakes, on the northern or lower part of the watershed of Ungava Bay, are not numerous, and with one or two exceptions, are of inconsiderable size—they increase however, in number as well as in size, as the elevated plateau is approached, on which the different streams discharging themselves into Hudson's Bay and Straits, the Atlantic and the Gulf of St. Lawrence, take their rise. On the plateau itself, the proportion of water appears to be equal to that of land.

The most considerable Lakes, of those properly belonging to Ungava Bay, are Caniapuscaw—the large Lake, on George's River, where the outpost was placed, and Erlandson's Lake; Lake Caniapuscaw, as already stated, is the source of South-River—it is situated in Lat. 54° 30′, Long. 67° 48′, and is nearly equi-distant from the St. Lawrence, Ungava and Esquimaux Bays, being about 350 miles from each of those places. It is about 70 miles long by about 15 to 20 broad—the surrounding country is hilly, especially on the western-side, the hills are, however, well wooded and abound in animals—the only rivers it receives are two inconsiderable streams. A post was established on the Lake, a few years ago, from Eastmain, by the Hudson's Bay Company, for the purpose of aiding the Posts in Ungava Bay; but from different causes, no communication ever took place between these posts, consequently, my knowledge of the Lake and the surrounding country is principally from Indian report.

Erlandson's Lake lies about 70 miles S.E. of Fort Chimo, between that Post and Whale River. It is a narrow lake, about 50 miles in length, abounding in fish, and is the principal support of the people of that post, being the place from whence they procure their greatest supply of food. Its borders are rugged and hilly, and thinly clothed with timber.

On the height of land are situated various large lakes, communicating with one another by short straits—of these, the largest are Nattecamshagan, Pettaustickabaw and Canicoanica, these all communicate with the Great Lake Meshagamou, forming a vast chain of water communication, extending some hundreds of miles in superficial extent. The waters of these lakes find their way to the sea, by the Grand or Hamilton River, of Esquimaux Bay. There are many other lakes besides those enumerated, but, though extensive in size, they are so extremely shallow as to be navigated with difficulty even by bark canoes. On Pettaustickabaw Lake, from the abundance of fish it possesses, the Indians were formerly in the habit of leaving their families while the men descended to the Posts of the seacoast, to trade their furs—but a post having lately been established on it, they now cease to frequent the coast.

GENERAL ASPECT OF THE COUNTRY.

Bleak and barren rocks are the distinguishing features of the sea-coast, except at the mouths of the rivers, where small stunted trees are met with—to the westward of South-River even these disappear, and the coast is entirely destitute of trees, The general appearance of the country surrounding the bottom of the Bay, as seen from the sea, is rather hilly than mountainous, and though it has a very rough and rugged appearance, it yet presents a favourable contrast to the shores of

Hudson's Straits, or the coast along the eastern side of Cape Chudleigh, where nothing but high naked rocks and mountains are to be seen—it is to this cause that we may attribute the highly favourable account, the Moravian Missionaries gave of the country at the extremity of the Bay, on their visit to it.

As the rivers are ascended the aspect of the country rather improves, especially on the immediate borders of the rivers, where the timber, in sheltered situations, attains a good size; but, on leaving the borders of the streams the scene changes rapidly—the trees decreasing in number and size, and becoming more stunted until they disappear entirely, and naked plains are reached, stretching out to the borders of another river or lake, where trees are again found. This description of country continues for a distance of 150 miles from the sea-coast, where it becomes less hilly and rugged, and better wooded, and continues so for about 200 miles further, to the borders of the Lake Pettaustickabaw, from this Lake continuing south, this comparatively favourable country is found—but, on leaving the Lake and proceeding eastward, towards Esquimaux Bay, the country becomes very mountainous and exceedingly barren. These remarks, which are the result of observations, made on South and Whale Rivers, apply equally to the country on George's River, with the exception, that this river is situated near the eastern extremity of the woods, the timber is much scantier than on South River, and the naked plains are nearer to its banks. In the vallies, between the rocky ridges, the ground is invariably of a marshy nature; so, that travelling in the summer season, except along the lines of the rivers is out of the question.

On removing the layer of moss, that everywhere covers the country, a pure, bright, silicious sand is met with, in the woods, slightly blackened by decaying leaves and other vegetable sub-

stances. It is in this soil, if soil it can be called, that the Red Spruce or Juniper pushes its roots—this is the only tree found in the Ungava country—in sheltered situations, it attains to the, comparatively speaking, large size of 12 to 15 inches in diameter; but, its general size, on the border of the rivers, is from four to six inches in diameter, decreasing from that to a small scraggy bush, as the plains are approached.

Underneath the sand, at a depth varying from one foot to a few inches, is invariably found the rock—it is from this cause that the whole of the lowlands are marshes—the waters arising from the melting of the snow being unable to find any vent, stagnate in the hollows, and in time becoming covered with a coating of moss, form a marsh—in short, the whole country may be described as a series of marshes, separated by rocky ridges, rising into hills in some places; and thinly clothed, at intervals, with small Red Spruce. The birch tree is not met with until the height of land is passed and the southern slope is attained, when a few stunted trees of that species are found.

NATIVES.

The natives, inhabiting this country, are composed of Esquimauxs, who are confined to the sea-coast, and seldom venture far inland; and the Nascapee Tribe, whose hunting grounds extend from near the sea-coast of the Bay to the upper waters of the streams that fall into the Gulf of St. Lawrence, and stretch westward along the height of lands very near to Lake Mistassiny.

The former people appear to resemble, ir every respect, their brethren in other parts of the Arctic region. I extract the following notice of them from the journal of a friend of mine, who has resided at Ungava Bay for some years; and, to whom I am indebted for a great part of the information I possess respecting the country:—

"As to the Esquimauxs of Ungava Bay, they are no more distinguished for art and ingenuity than their far-famed brethren of Boothia Felix, and from the parity of their relative circumstances, must resemble them in every other respect—they manifest the same predilection for raw flesh and blubber—live in snow houses in winter, and sleep on couches of the same material—dress in seal and deer skins formed into hooded jackets, shirts and breeches—the ladies also wear the latter article, as well as the jacket, having a long tail appended thereto—the said *tail* being the distinguishing mark of the softer sex. They also evince a disposition to appropriate their white neighbour's property to themselves—securing whatever they find of trifling value about the establishment—these trifles, however, they very readily give up, when detected, and that with the best humour imaginable; they appear exceedingly docile and tractable, cheerfully assisting in any service that may be required of them, and never appear dissatisfied with any recompense awarded to them.

"I have questioned them on the subject of religion, and, to my astonishment, they appear to have no idea of the Deity, or any conception of a future state. Those from the eastward, pronounce the Sacred Name, in an European language (German ?) which they must, of course, have learned from the Moravian Missionaries; but, the natives of the western coast have no term to express it. There can be no doubt as to the interrogations having been made perfectly intelligible to them; for, I employed a person, who spoke their language and understood it thoroughly, as my interpreter.* The greater part of the Esquimauxs, inhabiting the western coast of the Bay, pass the sum-

* Notwithstanding that my friend appears certain, that his questions were understood, I think that matter admits of considerable doubt, as it is directly opposed to the experience of the Moravian Missionaries, in their first intercourse with these people, as well as that of other travellers among them.

mer in the inland barren country, at a little distance from the coast, where deer are numerous at all seasons of the year (superannuated males for the most part): a considerable number of families, however, live constantly on the islands and along the coast where they also find ample means of subsistence.

"From the mode of life they lead, and the nature of the climate, the acquisition of European goods could not much increase the comfort of these people—their intercourse, with the whites, however, may in course of time, tend to create artificial wants, that may become as indispensable to their comfort or convenience as their present real ones;—even now, the natives to the eastward appear eager to obtain clothes, &c., to which they have become habituated, from the intercourse they have had with the Missionaries, though it has been but trifling hitherto. The western Esquimauxs appear to think less of European clothes—on the first establishment of a post in Ungava Bay they made a general rush for guns, which having obtained, many of them remained absent for years, sending the few furs they had, for ammunition and tobacco, by those who came in. Foxes are the only fur-bearing animals that they hunt, the woods being too far distant from the element that yields them their subsistence to allow them to hunt those of the fur-bearing animals that frequent the woods."

Such is the account given of these people by a gentleman who has had many opportunities of becoming acquainted with them; it will be seen from it, that they differ in no important particular, from the other tribes of this singular people, who have been visited by Europeans, if we except the fact of their having no notion of a Supreme Being; but, as already remarked, I attribute this to misconception on the part of the interpreter.

The Nascapees are the other tribe inhabiting the tract of country we are describing. The following account of these people is extracted from the Journal I have already so liberally borrowed from:—

"The Nascapees, in their persons and physiognomy, bear a strong resemble to the Cree Nation, from whom they are undoubtedly descended—their language appears to be a mixture of the Sauteur and Cree language, but jumbled together in such an extraordinary manner as to be almost unintelligible even to persons understanding both these languages.

"Depending solely on the chase for a subsistence, they of course, lead an erratic life, following the deer in their migrations from place to place; keeping generally together in large camps, a circumstance that frequently subject them to the extremes of starvation, the game being soon destroyed, or driven to a distance from them—in this respect they differ from their neighbours, the Mountaineer Indians, who seldom or ever hunt together in large numbers, two families generally associating themselves for that purpose. They are extremely liberal towards each other; whatever the hunter brings to camp is shared without reserve, in equal proportions among the whole community—this custom is not peculiar to them however, they possess it in common with all Indians who live by the chase. They are not fur hunters, nor is the mode of life they lead favourable to it; the chase of the deer leads them to the barren parts of the country, while the fur-bearing animals are only to be found in the woods; moreover, their favourite occupation furnishes them with all they require—they clothe themselves with deerskins—their tents are made of the same material, as well as their nets; what they do not require for these purposes, they barter with traders for the few articles that constitute the amount of their extremely

limited wants, such as, guns, ammunition, tobacco, axes, kettles and knives—these are the principal articles they trade for, nor do they appear anxious to obtain anything else we possess, unless by illicit means, for they are notorious thieves in addition to all their other good qualities.

"In common with most Indians, they are filthy in their persons and general habits; but, of all Indians, to these the palm of superlative filthiness must be yielded—there is not even such an article of domestic accommodation known among them as a spoon, the unclean hand performs every office. Their dress is similar to that of their parent nation, with the addition of breeches, which these wear, reaching to the knee—they appear to be exceedingly susceptible of cold, although they take more care to fortify themselves against it, than any Indians I have yet known.

"They are the most loquacious of all Indians—the loudest speaker always having the best of the argument; requiring only to exercise the strength of his lungs, not his reason, to gain his point, for they all chatter together at the same time.

"Their males and females are affianced in childhood, and become man and wife in early youth, but the connexion is dissolved at the will of the husband. Polygamy is practised, though rather, I believe, from motives of convenience than licentiousness—the more wives, the more slaves—the poor wretches of women performing all the drudgery here, as well as everywhere else among savages. Differing from all other Indians in most respects, and the difference invariably to their disadvantage, they also differ in the manner in which they receive 'a White Chief' who may happen to enter their disgusting lodges; —every eye stares at him, but not a hand or foot moves to offer him any accommodation; he sits or stands as he pleases, and

after the first feeling of curiosity is over, he is no more noticed than one of their domestic curs. Being always at peace with the neighbouring tribes, there is no call for the first of Indian virtues—courage, even if they possess it, which they most assuredly do not—true, they formerly attacked the poor Esquimauxs, but that was only when they could steal upon them, to murder them, without incurring the smallest danger to themselves—our presence, however, has had the good effect of entirely arresting this effusion of blood, and they appear now to be on amicable terms with each other.

"Before Ungava was settled, they were in the habit of deputing some of their elderly men to carry the produce of their hunt to the trading posts along the Gulf of St. Lawrence; from this circumstance a certain degree of consideration became attached to the parties so entrusted, which ultimately obtained for them the designation of chiefs, but the title was not supported by the least authority.

"As to their religion, they appear to have some crude notions of a Deity, and are very superstitious; but, strange to say there are no 'medicine men' among them.

"Their number is but small, 40 or 50 families comprise the total of those frequenting the posts of Ungava Bay."

It must be observed, that the gentleman who penned the above remarks, had not long before travelled among the warlike nations that frequent the plains laying at the base of the Rocky Mountains, and the degraded condition of the poor, miserable creatures presented itself to him with double force in consequence. To the fidelity of the above sketch I can bear witness —but, there is one custom, marking well their savage state, which not coming under his immediate observation, he has omitted to notice, but of the truth of which I have been well

assured, by persons who have had good opportunities of ascertaining it—I allude to the fact of their putting their old people to death, when prevented by age and infirmities from following the tribe—it is sometimes done at the request of the old people themselves, and is accomplished by strangulation, the nearest relatives being usually chosen for that purpose—nor need we be so much surprised at it, when we reflect upon the situation of an old and decrepit individual, among a set of people, who depend entirely upon the quickness of their movements to obtain their food, and consider the positive clog, and encumbrance such an individual must be to the motions of all the rest, more especially as they seldom or ever travel in canoes, except when bound for the trading posts. However dreadful it may appear to us, and surely no words can sufficiently express its enormity, yet, compared with leaving such an individual behind to die inevitably of the lingering pains of starvation, it is almost humane. The Chipewyans, of Slave Lake, whose situation approaches nearest to that of the Nascapees, appear to abandon their aged relatives in times of distress, and it is no doubt practised by many other tribes, but owing to their more favorable situation, occasions for such dreadful acts seldom occur. The Esquimaux, from the difference of their situation, appear never to be guilty of this cruelty, but no argument in favour of their superior humanity can be drawn from this circumstance, as they are sometimes guilty of acts of equal barbarity.

ANIMALS

The animals frequenting this country, are the Reindeer or Caribou, Black, Grizzly, and White Bears, Black, Silver, Cross, Blue, White, and Red Foxes. A few Lynxes, Martens in considerable numbers, in some parts, and of great value from their beauty; the Arctic Hare, a variety of a very large size,

the common Hare of Canada, called Rabbits, by the Orkney men in the service of the Hudson's Bay Company, numerous Otters, and a few Beavers and Musk-rats, on the height of land.

The birds are, the Spruce Partridge, the Ptarmigan or White Partridge, Hawks, Owls, Ravens, Whiskyjohn, and Woodpeckers—the above with the addition of a small bird, whose body is black and breast white, forms the catalogue of those who remain all winter—the only land-birds of passage are the Robin, Sparrow, and Swallow—Eagles are, also, sometimes seen—the water-birds are Eider Ducks, Saw-bill Ducks, Sea-Pigeons, Loons, Cormorants, Divers, Gulls, Brant and Solan Geese. The inhabitants of the waters appear to be Black and White Whales, Sea Horses or Morse, Narwhales, and Seals, together with a few Salmon that ascend George's River—the lakes yield White Fish, Trout, Pike, &c., of these the White Fish appear to be the most numerous.

The Reindeer and the Seal constitute the principal food of the natives—the former to the Nascapees and the latter to the Esquimauxs. The Reindeer pursue an undeviating migratory course every year, generally making their appearance, at Fort Chimo, in the month of March, from the Westward, directing their course to the Eastward, where they bring forth their young, they then return, through the interior to the Westward where they remain in the most barren parts, during the early part of the winter, until they are driven into the woods by the severity of the cold. Very few are found detached from the main body, unless old males, whom their youthful competitors compel to retire—when thus expelled, they form separate herds by themselves.

CLIMATE

In so high a latitude it need scarcely be remarked, that the

cold in winter is at times extremely severe. In calm weather there is generally a clear atmosphere and a serene, azure sky, nor is the least inconvenience ever experienced from the cold in such weather, even when the thermometer indicates a degree of cold, that would appear to be intolerable—it is only during the prevalence of high winds, that the cold becomes dangerous to those exposed to its influence on the naked plains; in the woods the cold is, of course, never felt so severely.

The quantity of snow that falls is considerable, but owing to the prevalence of high winds and the intense cold, it quickly becomes compressed, and is so hard that the heat of the sun has not the slightest effect upon it, until towards the commencement of May, when the crust, by the coldness of the night, becomes so hard, that the impression of the hoofs of the Reindeer are scarcely perceptible. The ice breaks up, in South River, generally from the 7th to the 15th of June, but it is seldom navigable before the 20th to the 25th. Summer may be said to commence about the latter end of June, and to end about the middle of September, including in the term "summer," the seasons known elsewhere as spring and autumn. The heat is very intense at intervals, during the months of July and August, but extremely sudden transitions from heat to cold are often experienced—winds from the sea are invariably accompanied by fogs both in summer and winter, which prove very annoying. Auroras are extremely frequent and very brilliant.

HISTORY OF THE DISTRICT.

Weymouth, in his Voyage of Discovery, which took place in 1602, appears to have been the first who entered this bay—having some time previous been compelled by the mutinous behaviour of his crew, to abandon his intention of forcing his way

to the westward, he had descended as far south as Lat. 61° where finding the entrance of a large inlet, he sailed in a south-west direction 100 leagues by reckoning; from the latitude and the course he sailed, there is little doubt that he descended the bay, but the distance he sailed is evidently overrated—finding the season advance, and being doubtful of his men, he retraced his steps, and gained the open sea—but there is no doubt that his report of this extensive inlet directed Hudson's attention to it, and was partly the cause of his future discoveries. Hudson himself does not appear to have entered the Bay.

For more than a century after Weymouth's time, we have no account of any one entering the bay. In the maps of this period, it is variously called the Bay of Hope's Advance, and South Bay, and is represented as communicating with a large inland gulf, which again communicates with Hudson's Bay, in the latitude where Richmond Gulf is situated; thus the whole of the southern side of Hudson's Straits, was represented as a large island; this configuration of the coast kept its ground in the maps, until nearly the close of the last century, when the east side of Hudson's Bay having been fully traced, it was found that no such outlet existed along that coast—it was accordingly expunged, and the entrance of South Bay was merely laid down, but its shores were not delineated.

In 1811, the Moravian Missionaries, living on the coast of Labrador, who had some years previously, received accounts of tribes of Esquimauxs residing to the westward of Cape Chudleigh, in what was called Ungava, by the natives, determined on visiting these people, for the purpose of ascertaining the practicability of founding a Mission among them, accordingly Messrs. Kohlmeister and Kmoch embarked for this purpose and explored the shores of the bay, as far west as the entrance of a

river, called by the natives Koksoak or Sand River, since called by the whites South River. Contrasted with the bleak and naked shores they had left, the country round the bottom of the bay clothed with trees, rugged and barren as it undoubtedly is, appears to them delightful, and the accounts they gave of it were very flattering; it was accordingly resolved that a mission should be immediately established, but circumstances over which they had no control, rendered it impossible for them to carry out their pious intention for many years; and the means they took, to rouse up the efforts of piously disposed persons, to aid them, were ultimately the cause that they were obliged to abandon the idea altogether—for having published a small pamphlet giving a description of the country, and the number of its inhabitants, the perusal of it drew the attention of the Hudson's Bay Company to that section of the country, and it was resolved to pre occupy it, so as to defeat the intentions of the Missionaries. Accordingly, in 1824 or 1825, an expedition was fitted out at Moose Factory, to take possession of the country, but owing to some unforeseen circumstances it did not start that year; in the meantime one of the medical men attached to Moose Factory, was sent westward to explore the country, and finally, in 1827, an establishment was formed, by the building of Fort Chimo, not far from the mouth of South River. It was soon found, however, that the flattering pictures of the Moravians were rather highly coloured, and the number of the Esquimauxs, and the trade to be carried on with them were alike paltry and insignificant; and as to the natives of the interior, the numbers that frequented the post were equally small. The Company seems to have been discouraged by this state of things, and it was not until 1834 that any efforts were made to explore the interior to the southward and eastward; in that

year, a clerk of the Company left Fort Chimo on the 6th April, to explore the country to Mingan, but when on the height of land his guides refused to conduct him there, and brought him to Esquimaux Bay, where he arrived on the 22d June, being the first European who had traversed the interior in that direction. In 1835 a post was established on the height of land, but was abandoned in the year following. In 1838 the journey across was again performed, both coming and going during the winter, by the gentleman whose journal I have so freely used in compiling these Notes. During the last three years, it has been performed several times; new, and more easy routes having been explored, and two or three posts established in the interior.

In the present year, the Company finding the trade with the Esquimauxs to be utterly insignificant, and that the wants of the natives of the interior could be better supplied from Esquimaux Bay, directed the abandonment of Fort Chimo and the other posts of Ungava Bay, and the Esquimauxs are once more left to themselves; but, with this difference, that new wants have been created by their intercourse with the whites, which they will find equally difficult to satisfy as to do without. It remains to be seen whether the Moravian Missionaries will resume their original intention of establishing a Mission among these people now that the field is once more clear.

Article 12.—Notes on the measures adopted by Government, between 1775 and 1786, to check the St. Paul's Disease. *By the* Hon. A. W. Cochran, D.C.L.

(Read 6th March, 1841.)

About the year 1773, the attention of the Government of Lower Canada was drawn to the increasing ravages of a peculiar disease, which, originating at Mal Baie, had spread to other parts of the Province. A tradition exists, that it was imported into Mal Baie, by a detachment of Scotch troops who were either sent there on service, or were thrown there by some accident of navigation some years before; but, there will appear much reason, in the sequel, to doubt the correctness of the supposition. The fact that most militates against it, is the spread of the disease, in a manner resembling more nearly an epidemic than a contagion, to remote parts of the Province, between which and Mal Baie there could not then have been much communication.

The great resemblance of the disorder to some forms of syphilis, and it disgusting character, led the unhappy sufferers, who were aware of that resemblance, to conceal their condition as long as possible, while those who were not aware of it, looked upon the symptoms as the result of scorbutic humours, and trusted to ordinary remedies, or to time, for relief; and,

from both these causes, in addition to the remoteness of the parish where the disorder first made its appearance, and the want of medical assistance on the spot, the evil was unknown, until it had reached such a height as to require the attention of Government.

The characteristics of the disease are stated in a printed description, circulated by Government, some time in 1785, with directions for cure. (See Appendix, No. 1.)

Shortly after it first attracted the attention of Government, in 1775, General Carleton, the then Governor, sent a surgeon's-mate, of the 7th Regiment, to St. Paul's Bay, with instructions to administer medical relief, gratis, to the persons infected with the disease. The officer was recalled to Quebec, the same year, upon the invasion of the Province, by the Americans, and dying here the following summer, General Carleton then appointed Mr. Badelard (who had been surgeon of a French corps) to be Hospital or Surgeon's-mate to the Garrison of Quebec, with a view to employ him in the same service. Mr. Badelard was ordered, from time to time, by General Carleton, and after his departure, in 1778, by General Haldimand, to repair to Saint Paul's Bay, and other Parishes, as occasion required, where he treated the persons infected with the disorder with success. When the reduction of the Hospital Establishment took place, in 1782, General Haldimand still continued Mr. Badelard, on the Staff of the Garrison, for the same service, and that gentleman visited different parishes, remaining in some a week or a fortnight at a time, to attend to infected persons. In 1783, the subject was taken up in Legislative Council, who, during the Session of that year, represented to the Governor, by an Address, "The anxiety and concern which the alarming progress of this disorder, then commonly

called the St. Paul's Bay disease, had caused in the Province, and while they acknowledged their sense of the measures which His Excellency's humanity and attention to the welfare of the people had induced him to take, in order to remedy the evil, they requested, that by means of the clergy or otherwise, a list might be obtained of those infected in the different parishes, and pledged themselves to support such measures as should be taken by the Government to arrest the evil." In March, 1784, the Governor informed them, that by the returns of the clergy, it appeared, that the number of persons infected was less than had been supposed; and that the poor, in the parishes near Quebec, had been attended and treated by his orders, and that the same measures should be continued. In March, 1785, General Haldimand having then quitted the Government, his successor, General Hamilton, informed the Council, that he had employed a person, (Dr. James Bowman) to go through the country parishes, and take the necessary means to extirpate the disease. (See Instructions, 18th April, 1785, Appendix, No. 2.) The Roman Catholic Bishop, at the request of the Government, addressed a circular to the Clergy on the subject, sending them copies of the printed paper already referred to, describing the disease and the method of cure. Dr. Bowman, in the course of the following summer, visited most of the parishes in the Province, and, in almost all of them, according to his account, found persons infected with the disease. In 1786, he repeated his visit to many of the parishes, and his Returns to Government, for the two years, exhibited the following results:—

Visited, 1785—5,801
" 1786—4,606

Difference between increase			
in some Parishes	673		
And decrease in others	124		
	——549	+ 5801 =	6,350
Doubtful			90
Total supplied with medecine			6,440
Of whom returned as cured, in 1786			807

The abstract, shewing these results, was formed upon certificates, sent by the Clergy, of the persons to whom medecines had been supplied under Dr. Bowman's directions; but, upon his presenting his account against Government, for this service, in which he charges five shillings a head for each person so supplied, amounting, with travelling charges, postages, and personal remuneration, to about £2.500, the Government saw reason to institute a close investigation into the extent of the services actually rendered by him in 1785; and, it appeared, that there was reason to doubt whether they had been as extensive as he had represented; that he had supplied medicines, in some places, where no sickness existed, and that he could not have visited at all, other places mentioned in his return, that in most cases visits must have been so short, as not to allow of sufficient enquiry and examination, (since he travelled, by his own account, 800 leagues in four months of 1785 and, in one instance, administered advice and medicines to 500 persons, in two days, in parishes some leagues apart); and, that in other cases, the Clergy gave him certificates of medicines being furnished, upon his mere promise to send them.

But, making large allowance for error and misrepresentation on his part, the return of the Clergy, showing the number of persons appearing to be infected with the disease, exhibit an

extraordinary proportion, in a population not then amounting to 120,000 souls. The largest number appear to have been found in the following parishes.

	1785	1786
St. Paul's Bay	328	317
St. Thomas	118	183
St. Pierre Rivière du Sud, St. François Rivière du Sud	120	
St. Charles, St. Gervais	231	219
St. Marie, St. Joseph, St. François	148	
St. Nicholas, St. Antoine	125	
Yamaska	228	228
St. Ours	163	161
St. Charles	156	194
Blairfindie	116	128
St. Philip, La Tortue	178	238
Vaudreuil	106	120
St. Martin, St. Rose	107	133
Mascouche	190	190
St. Jacques, St. Roch	153	
Boucherville	112	120
Repentigny, St. Sulpice	205	
Berthier	248	248
St. Cuthbert	135	149
Rivière du Loup	133	
Deschambault	70	

The Parishes of Berthier (D. of Quebec), Batiscan, Champlain, St. Augustin, St. Foy, Two Lorettes, Charlesbourg, Beauport, St. Famille (I. of Orleans), St. François, do., St. Joachim and Isle Verte, and the Indian Villages, returned none infected.

	1785	1786
Mal Baie..... *only*	9	23
St. Roch.....	15	22
St. François (T. R.).....	6	15
La Chine.....	14	14
Pointe Claire and St. Anne.....	7	26
St. Laurent.....	17	
Pointe du Lac.....	7	
T. Rivers and Cap Madeleine...	13	
St. Geneviève and St. Stanislaus.	17	
Point aux Trembles, Ecureuils ..	4	
St. Jean (I. of Orleans).....	4	
St. Laurent (Do).....	12	
St. Anne, St..Fereol.....	7	

It will be seen, by this enumeration, that the disease prevailed most in some parts of the Province, where, from the richness of the soil and the settlements having been long made, the inhabitants must have been far above the condition of poverty—and, that looking to the character of the localities, if on the one hand, it appears to have been most rife in places where the soil is alluvial, and the settlements are formed on ruins,—on the other hand, places so situated, either appear to have escaped entirely or to have but few cases, and that it made considerable progress in other places of an elevated ocality.

Then with respect to the subjects attacked, it appears to have been equally capricious; sometimes a child at the breast

was seized with it, the mother or nurse remaining well, and *vice versâ*· no age was excepted; the manner of its propagation was equally obscure. It was supposed that it was taken, in some cases, by merely drinking out of the same cup, or using the same spoon with an infected person, or by the contact of clothes. It is denied, by many eminent medical authors, that the disease to which this disorder would seem to bear considerable resemblance, can be communicated by mere contact, without an abrasion of the skin; but, supposing that this disorder could be propagated by mere contact, how are we to account for the facts above referred to, and established by good evidence, that infants at the breast were attacked when the mother was not; and, how in the state of the Province at that time, when a commuuication hardly existed between St. Paul's Bay and the parishes of the Montreal District, are we to account for its spreading to localities so remote ?

The methods of cure are indicated by the printed paper, circulated by Government, and it appears from other sources, that mercurial medicines, zinc, and preparations of hemlock, and large quantities of bark, were among those chiefly used. It is to be regretted, that the observations, made by Dr. Bowman, on the disease, and the notes of his treatment of it, in different cases, which he laid before the Government of that day, are not to be found. It appears, however, that there existed at the same period another disease, something resembling it, but not running the same course, which is described, by an intelligent Curé, as follows:—"Ce sont des ulcères, fixes ou mobiles ordinairement aux bras ou aux articulations des jarrets, d'où distille une humeur rougeâtre et un peu purulente, accompagnée d'une cuisson très-douleureuse dans la partie ulcérée,des douleurs se font quelques fois sentir aux reins ou à l'estomac; les

sujets sont sains d'ailleurs. Ce sont disent-ils des reliquats d'échauffaisons dont ils n'ont pu guérir depuis nombre d'années."

A pamphlet was published, in 1785 or 1786, at Montreal, on the disorder as it appeared there, with a statement of cases and their cure; and, when Dr. Nooth, a physician of eminence, belonging to the army, was at the head of the Military Hospital Department, in this country, a few years after Dr. Bowman was employed, and while his claims were still before the Government, Dr. Nooth's attention was called to the subject, by Government, and he approved of the course that had been pursued. It is believed, that he collected such information as could then be got on the subject, for the purpose of publishing it in England; but it is to be regretted, that the report he made upon it to the Provincial Government is not to be found. A few years ago, the existence of such disease, and its similarity, in many respects, to one known in the Highlands of Scotland by the name of the *Sibbans*, was noticed in a Medical Periodical Journal, published in Great Britain, and a hope was expressed, that further information on the subject might be obtained. The present notes are thrown together in the same hope; and, it is believed that some gentleman of that profession to which the inquiry more particularly belongs, might do a service to science, by endeavouring, even now, to recover the information, on the subject, collected fifty years ago, which, probably still exists in this community in a written form, and might, by tracing the characters and analogies of the scourge which then visited the Province, furnish grounds for determining, whether it proceeded from accidental and imported causes, or from others, connected with the habits of life of the people, and which may, under the like conditions, come again into operation.

APPENDIX No. 1.

"LES premières indications de ce funeste mal, se manifestent communément, par de petits ulcères sur les lèvres, la langue, l'intérieur de la bouche, &c. Ce sont de petites pustules, remplies d'une matière blanchâtre et purulente, qui renferment un poison si subtil, que sa plus petite portion est capable de communiquer l'infection; boire dans un verre, fumer avec une pipe infectée de cette matière vénéneuse, c'en est assez pour faire naître sur les lèvres une petite ampoule remplie de cette même matière, qui venant à se dégorger, dilate la plaie, corrode les chairs circonvoisines et forme un ulcère plus grand.

LE linge, les draps, les couvertes, les habits, &c. peuvent contenir assez de cette matière pour communiquer la contagion.

IL y a des tempéraments qui absorbent le poison et les ulcères paraissent guéris: mais ils reparaissent bientôt; et alors, le mal est à sa seconde période.

DE plus grands ulcères se forment à la bouche, à la gorge, aux parties et au fondement. Les glandes du gosier, des aisselles, de l'aisne, sont enflammées, et déchargent quelquefois du pus; souvent elles deviennent des tumeurs dures et insensibles, qui changent de place en les touchant. Bientôt les douleurs se font sentir, à la tête, aux épaules, aux bras, aux mains, aux cuisses, aux jambes, aux pieds. Pendant ce temps, le malade croit que ce sont ses os qui sont affectés. Ces maux augmentent, quelquefois, par l'exercice, dans les tems humides, et au lit, lorsqu'on commence à s'y échauffer, et diminuent de même vers le matin, lorsque la transpiration survient.

Le troisième dégré de la maladie peut se reconnaître à des croutes galeuses sur la peau, qui se montrent et disparaissent tout-à-tour. Bientôt les os du nez se pourrissent, ainsi que le palais, les dents, les gencives; surviennent des bosses, sur le crâne, sur les clavicules, aux os des jambes, aux bras et aux doigts des mains. On voit des ulcères sur tout le corps, qui, après avoir disparus, reviennent. Enfin, des douleurs de côté et de poitrine, la difficulté de respirer, la toux, le défaut d'appétit, la chute des cheveux, la perte de la vue, de l'ouïe, de l'odorat, sont les précurseurs de la mort.

Au reste, il ne faut pas s'y tromper: car quelquefois, les premières apparences du mal se montrent par les symptômes du second et même du troisième degré."

[*The directions for cure are omitted, as the nature of the Medecines prescribed is not stated; and the other directions given are only such as relate to the care of the general health and habits.*]

APPENDIX No. 2.

Lieutenant Governor Hamilton's Instructions.

SIR,—You will in consequence of the authority hereby given you, proceed upon a progress through the several parishes of this government, with the design of administering your advice, and distributing the medecines necessary for the effectual cure of the disorder commonly known by the name of the St. Paul's Bay distemper.

You will keep an exact diary of your journey, and a correct list of the parishes you shall have visited, with a faithful return of the persons who shall undergo your inspection, distinguishing their age, sex and condition, stating the progress of the disease of each, and procuring (if practicable) a certificate from the respective curates of the number whose cures shall have been undertaken by you.

If any objects of distress shall occur to you in this progress, not immediately coming under the designation of the above named disorder, but wanting immediate relief, the extra expence incurred by the relief of such objects shall be allowed you.

You will endeavour by all means to conciliate the good will of the clergy, who may be at all times so instrumental in aiding your endeavours.

You will in your tour, make enquiry for, and examine into the properties of any medicinal springs whose waters may be salutary to the inhabitants: You will (if practicable) analyze them, and leave with the curate of the parish, where such springs may be found, an account in writing of their properties, and how they are to be used to advantage.

You will preserve copies of these notes that they may be published upon your return, for the benefit of the province at large.

You will collect materials for composing a complete history of the disorder, to be published when convenient.

The medicines and the extra expences of carriages,postage, stationary, and occasional charges incident to the situation of paupers, the journey, or to the faithful discharge of the trust reposed in you, shall be paid, on your having completed the object of your expedition, with the sum of two hundred guineas exclusive of those expences and charges.

Given at the Chateau St. Louis,

Quebec, 18th April, 1785.

HENRY HAMILTON, L. S.

(N O T E.)

Extract of a letter addressed about the year 1786 or 1787, by Charles Blake, Esq., M.D., formerly Surgeon of H. M. 34th regiment, to the Committee of Council on Police and Population, respecting the St. Paul's Bay disease.

"I will now give you such an account of that complaint, which goes by the name of the St. Paul's disease, as my knowledge can afford.

"In the year 1776, His Excellency Genl. Carleton, (now Lord Dorchester) had many reports of the prevalence of this disease in most parts of Canada; and that there was a specific virus in it which made it differ from most diseases known. It was supposed from the similarity of its symptoms to be the same disease as that which was known in the Highlands of Scotland under the name of Sibbans or Sivvans:* The inhabitants of St. Paul's Bay declared it was received from a Scotch Pilot who lived a winter among them; and from thence some called it the *Mal Ecossais;* In other parts of Canada the people have conjectured that it was brought into the country

many years ago, by a set of Indians who went by the name of Luesticreux (*Sic.*)

"But let its origin be what it will, it is enough for us to know that such a disease occupies too much of every part of Canada, from St. Paul's Bay to Machilimackinac.

"I was quartered in the town of Quebec in the year 1776, and finding the disease to be of an alarming nature, I offered to visit the places where it prevailed; but being then a surgeon in the 34th regiment, my wish could not be complied with and Mr. Menzies, a mate of the Hosprital, was sent down to S. Paul's Bay to bring up some of the worst objects, for the inspection of the faculty at Quebec.

"After being fixed at Montreal, objects presented themselves daily with this disorder, and I reported the circumstance to the Grand Jury, who I believe made a representation to the Government at Quebec, but I am informed that is was stated to the Council that the disorder was decreasing, and in consequence nothing was done at that time; but the disease is always in a progressive state; and I beg to inform you now, that few Parishes are quite exempt from it, and as it has become so general, any plan to eradicate it must be on general principles.

"I have been told by a Priest that some have refused to confess that they had the disease, though the being deprived of absolution should be the consequence; but I imagine these prejudices would soon subside, if they saw people set heartily about doing them good.

"This disease is nothing more than a confirmed Syphilis, shewing itself in different ways in different parts of the body; and making anomalous symptoms and appearances accordingly.

"The habits of the Canadians facilitate its communication in various ways; they use the same cup, drink from the same

bucket, often borrow one another's pipe to smoke, chew their infant's food and spit it into their mouths; they constantly spit on their floors and never clean them, and the lower class are generally regardless of cleanliness: All these circumstances help to communicate and keep up the disease, which may take effect any where that the skin happens to be broken.

"The disease being of the nature I have stated, it gives way to no remedy but mercury; and whatever impositions may be forced on the public mind as to its being a disease *sui generis*, or whatever mystery may be made about the disorder or the medicines for its cure, I aver that nothing but mercury will cure it; and as it gives way to nothing else but mercury, and as this raises an inflammation in some degree, how is it possible that it can be given with safety merely by delivering boxes of pills to the patients for their own administering, and leaving the action of the medicine, as well as the disease to a precarious issue? It is not only necessary to administer the medicine, but the effects and symptoms must be watched by some medical man, and after the medicine has taken effect, further attention is required to get it out of the system.

Mr. Sym, an eminent practioner in Physic, at Montreal, told me that seven patients have come in one day for admission into the Hospital there, with swelled heads from the improper use of the mercury given to them by the Priests, agreeably to the directions left by Mr. Bowman. This may shew the Council that an evil exists where they acted with the most humane intentions; and I hope they will consider of some other plan."

(Signed) CHARLES BLAKE, SURGEON.

* A disorder marked by nearly the same symptoms and effects has been observed by travellers among the Inhabitants of the mountainous Region of Asia North of the Hindoo Coosh and about the upper streams of the Oxus, quite out of the range of ordinary intercourse or communication with other countries except China.

ARTICLE 13.—*The Twenty Years Siege of* CANDIA. *By* EDWARD TAYLOR FLETCHER, *Esquire.*

[Read before the Society, 19th January, 1853.]

IN the middle of the seventeenth century, the glory of the Most Serene Republic of Venice was already on the wane. Cyprus was lost. The islands of the archipelago were under Moslem sway. The Turks were established in the Morea. Of the three subject kingdoms, whose flags were wont of old to wave in the great square of St. Mark, Candia alone remained uninvaded. The commerce of Europe was forsaking its former channels. The state offices of the Republic were fast becoming venal. And weakened by the terrible struggle that followed the league of Cambrai, the government, since the period of that formidable coalition, had appeared solicitous, in its relations with the other Christian powers, to confine itself solely to a cautious and defensive policy.

Nor were the Venetians less anxious, though two wars had since intervened, to avoid unnecessary collision with the sublime porte. When, in 1638, the proveditor Marino Capello attacked a piratical fleet lying in the Turkish port of Vallona, and fired upon the town itself, they entered into all reasonable explanations, and even paid a large sum of money to soothe the awakened wrath of the Moslems. And although the exploit of Capello was lauded by all Christendom, by none more than by the Venetians

themselves, yet, to save appearances, no farther public rejoicing were allowed than a solemn thanksgiving and the celebration of high mass. They constantly maintained a bailo, or consul, at Stamboul, who was not unfrequently subjected to indignities repugnant to the law of nations. Even during the hostilities consequent on the invasion of Candia, an agent with a semi-official character was always kept at the Turkish capital, to receive the propositions of the sultan. Without doubt, a conviction of the loss and annoyance, which the Turks had it in their power to inflict on their Mediterranean commerce, weighed heavily in inclining them to preserve amicable relations with the Ottoman porte.

But the Turkish Government had, for many years, cast a longing eye on the magnificent island of Candia. They could not forget that in the morning of Mohammedan greatness the Crescent had once waved where the Lion of St. Mark now held sway. They knew the productiveness of the island, its richness in vines, olives, and fruits of every kind, its strength in fortified places, its fine harbours, and the abundant population of its plains and vallies. It stood, too, in the very gateway of the Egean, in the track of their sea-trade with the mouth of the Nile. It seemed the natural birth-right of the Moslem, surrounded by Moslem shores, and whose very metropolis was the work of Saracen hands. The fervor of religious fanaticism was roused by the prospect of a holy war: the very difficulty of the enterprise increased the intensity of desire: and hope was strong among true believers that Candia would share the fate of Cyprus, and the last of the three kingdoms be torn from the grasp of their powerful commercial neighbours.

The ferocious Ibrahim, dragged almost by force from a prison to a throne, was at that time sultan. He seems to

have labored under a moral as well as intellectual insanity. "Stolid," says the historian Nani, "without intelligence, "furious without an interval, with such a mixture of cruelty "and of fear, of prodigality and avarice that he appeared to "his own people a compound of opposite opinions, habits "and vices." Mehmet, formerly pacha of Damascus, was his vizier, a man chiefly notable for his intense hatred of the Franks. With such inflammable materials it needed but a spark to light the flames of war. And this was not long wanting.

In the autumn of the year 1644, a squadron of six Maltese gallies, under the command of Gabriel des Chambres Boisdanbran, was cruising in the Levant, on the look out for the rich caravan which at this season left Constantinople for Cairo. On the morning of the 29th September the Turkish squadron hove in sight, consisting of two large galleons and a convoy of seven saicks. Boisdanbran having divided his squadron, and three gallies attacking each of the galleons, the smaller one after a sharp struggle was speedily taken, and foundered soon afterwards. But the other, mounting sixty guns, and having six hundred men on board, made a long and determined resistance: the knights endeavoring in vain to scale the lofty sides, while the Turks from above showered down every species of shot and missile, putting to the sword the few who where able to achieve the perilous ascent. Boisdanbran himself, with upwards of a hundred men, was struck down: eight hours were consumed in this murderous conflict: until at length the constancy of the assailed, disordered by the cries of the women and lamentations of the faint-hearted, gave way before the united efforts of the six gallies, and the Maltese, elate with their rich prize, allowed the smaller craft to make their escape. An immense treasure rewarded the captors, and among the prisoners was one of Ibrahim's sultanas,

with her son, a boy of four years, who subsequently became a Dominican friar. The victors taking their prize in tow, bore away for the southern coast of Candia: and at Calà Limeones, an undefended port, they took in water and disembarked fifty Greeks liberated from Turkish servitude. Coasting along Sfaccia they would have anchored at Castel Selino, but were prevented by the Venetian commandant. At Cerigo, from similar prudential motives, the proveditor of the Republic also declined to permit them to anchor: whereupon, the wind being unfavourable, they anchored in the cove of San Nicolo, and then in some solitary bays of Cephalonia. At length the wind shifting fair they set sail for Malta, and having cast off the prize, which had become unmanageable, they finally entered that port in the beginning of November, amid the plaudits of assembled thousands. "Vittoria," remarks Brusoni, "veramente funesta: perchè...tiro sovra la Christianità quella crudel gueyra che con tanto sangue di tutte la più chiare Nazioni d'Europa l'ha spogliata del più forte antemurale nell Oriente contra le impressioni barbariche."

Venice was in a fever of apprehension. Participation in these proceedings was hastily disavowed. Letters inviting support and sympathy were despatched to the neighboring Christian powers. The Republic, with its spies everywhere, was but too well aware of the temper and inclination of the Porte. Ibrahim, on the other hand, fell into a transport of fury on receiving the news, exclaiming that the Maltese had robbed him of his slaves and merchandise, and that the Candiotes, by suffering them to anchor and land, had become accessory to the stain on his honor and reputation. Yet, after the first burst of anger, he professed, with profound dissimulation, and as if to lull the Republic into a fatal security, to be satisfied with the explanations of the Venetian Bailo. But, vast levies

were raised throughout the empire: gallies were built; the fleet placed in an efficient state; and their barbarian allies invited to co-operate. The Republic, undeceived by the assurance that these preparations were directed against the knights of Malta, silently made its own dispositions, and awaited with anxiety, yet with no unmanly trepidation, the striking of the first blow.

They had not long to wait. Great was the alarm of the Candiote peasantry, when, on the 24th June, 1645, the approach of a Turkish fleet was signalized from Cape Spada, the north-west extremity of the island; and an armada of three hundred and sixty-eight gallies, with sails set, banners flying, and the clang of innumerable martial instruments, was seen approaching in the form of an immense half-moon. A landing was effected at Gogna, in the bight of the bay, between the Cape and Canea. Fifty thousand men were disembarked, with repeated salvoes of artillery. The fields, at the time, were full of grain and fruits, and the hamlets of people. In a moment, all was changed. The blessings of autumnal abundance were succeeded by terror and despair. "Some," in the words of the Venetian chronicler, "seized their effects in haste, others left them; "mothers, with their children, either followed weeping the "steps of their husbands, or hung upon them with unap- "peasable lamentations." The greater part fled to the mountains; some few reached Canea. The island castle of St. Theodore, a dismantled fortress, garrisoned by only sixty-five men, was next attempted to be carried by assault; but the brave commander, Biagio Giuliani, unable to resist the advancing deluge, fired the magazine, and blew up himself and his assailants together. The ruins stand there to this day. The tide of invasion continuing to roll eastward, Canea, the second fortified place in the kingdom, was immediately invested, and capitulated after a siege of

fifty-seven days, thus giving the Turks a firm footing in the island. Rettimo was taken in November of the following year. The year 1647 was chiefly spent in ravaging the open country; and on the first day of May 1648, the first breaching battery opened its fire upon Candia, the metropolis, from a small eminence known as Santa Lucia, a short distance to the eastward of the town and by the sea side. From this battery, the lines of the besiegers were then extended, through a valley, to the front of Fort San Demetri, thence by a water-course towards the Church of Madonna de Diavatigi, where a strong *corps-de-garde* was posted, protected, by the lowness of the ground, from the fire of the town. Thence was thrown up a covered way connected with a redoubt, for the protection of those who worked at the approaches. And on the following day, though under a heavy fire from the besieged, another similar redoubt was formed, in front of the *demi-lune* of Santa Maria, and a line of communication then thrown up, with wonderful celerity, between the redoubts, during the night, so that the besiegers could now pass, without being exposed, from any part of their line to another. In fact, the engineering talent displayed by the Turks throughout this siege seemed even superior to that of the Venetians and their allies, and taxed to the uttermost the skill and resources of the besieged. Voltaire has remarked this superiority, and has noted their adoption, for the first time, of parallel lines in their trenches: a usage since borrowed from them by the French, but which the Turks themselves are said to have taken from an Italian engineer.

A singular incident is recorded by Nani to have occurred shortly before the formation of the siege. The Pacha Hussein fell sick while observing the town from the hills of Ambrusta. His illness increasing, he requested the Captain

General Moncenigo, at that time within the walls, to send him his own physician, the celebrated Circoletto. The noble confidence of the Turk was met in a kindred spirit by the brave Venetian. The physician was sent, the Pacha was restored to health, and in a few days afterwards the town was formally invested.

The resources of the metropolis were at this time scarcely adequate to the emergency. The plague had recently made fearful havoc among the citizens, and the hospitals were even yet filled with the sick. The dryness of the surrounding soil favored the approaches of an enemy. The garrison, of six thousand men, was insufficient to man the extensive works, some idea of which may be formed, if we consider the town with its *enceinte* as a triangle having its sides nearly equal and each about a mile and a half in length, the north side fronting the sea. On the eastern side, the bastion de la Sablonière was nearest the shore; then in order followed those of Vetturi and Gesù to Martinengo the southernmost; then, going northwards on the eastern side, we have those of Bethlehem, Panigra and St. Andrew, the latter being the westernmost. Besides those were the Fort St. Dimitri, in front of the Vetturi Bastion, several demi-lunes, and a multitude of lesser works. The feudatories of the kingdom, under Georgio Cornaro, were therefore called in. To the Candiote militia was confided the care of the bastions and outworks; while the feudatories, with fifteen hundred regulars, were posted in the Place d'Armes. Fort St. Dimitri, which from the eminence of its site looked like a citadel, was committed to the charge of Girolame Battaglia and the Count Valvason. Among the other commanders, to each of which some special post was assigned, were La Mar, Gil d'As and the Count Achille the Romorantin; the supreme command being vested in the Captain General. War being thus brought, as it were, to

their doors, every citizen took an active part in the defence, and by bodily toil, by incessant watching, by frequent sorties and hand to hand contests, became hardened by degrees, and familiarised with every form of danger. The thunder of the cannon continued day and night. Strong counter-batteries were planted on the San Giovanni curtain. Shells and grenades streamed forth incessantly into the approaches. A mine was run under the outworks of Martinengo and Gesu in anticipation of an assault. Sometimes mine met counter-mine, and men fought underground in the darkness. "All around," says the historian, "seemed one vast cemetery." No effort was spared by the besieged. The master-mind of Moncenigo advised, directed, sustained and animated all.

The fire of the breaching-batteries was directed against four points: the lower part of San Demitri, the Della-Palma hornwork in front of the bastion Gesu, the crown work of Santa Maria, in front of the Martinengo bastion, and the ravelin St. Nicolo before the intervening curtain. In two successive assaults the Janissaries were driven back with heavy loss. But in the beginning of July they succeeded, after a severe struggle in retaining possession of part of the hornwork, and on the night of the 5th, an immense mine being sprung under Santa Maria, a panic seized its defenders, they retired in headlong haste and without firing a shot, and the Turks with exultation established themselves in this important outwork. The annoyance of Moncenigo was excessive; the fugitives were punished with extreme rigour. On the 10th the General Della Marra, a noble Neapolitan, while observing the field from an embrasure of the Gesu, was struck by a musket ball in the forehead. His remains were conveyed to the Metropolitan Church of San Tito; they were then embalmed and sent to his own country. The General Gil d'As succeeded him in his

command. A number of women having volunteered to work in the new galleries, then being excavated, were drafted by him into companies, each receiving a lira as daily pay. On the 24th at midnight, a mine was sprung under the Martinengo bastion and on the 26th another; so much damage was effected that Major Belloret, a French engineer, expressed his written opinion that the place was indefensible, but the statement was ill-received by the Captain General, who briefly declared his intention of holding out to the last. On the 27th, the Osmanlis, impatient for the assault, blew up the rest of the salient angle of Martinengo, already shaken by the mine of the 24th and rushed on to the breach, but were again driven back with loss. On the followind day, the redoubt of Crevacuore, near San Demitri, was blown up. On the 29th, a breach thirty paces wide was effected in the east flank of the Gesu, and an incessant fire kept up upon it, to prevent its being repaired. On the 4th of August, a general assault took place on all sides; the Janissaries coming on with wild cries, while earth and heaven seemed shaken by the explosion of mines and the din of artillery. Hussein, sabre in hand, was seen threatening death to the falterers. Within the walls, the city-bells clanged unceasingly; the citizens flocked everywhere to their posts; those who from age or sex were incapable of bearing arms were divided into parties, some to carry ammunition, some to withdraw the dead, others to tend the wounded. The sharpest struggle was at the Martinengo bastion, where was stationed the flower of the Venetian forces. Borne down and wearied by press of numbers and hours of incessant conflict, the defenders receded for an instant, and the Turks succeeded in planting their banners on the bastions. Thereat a great cry of rejoicing went up from their host. But the soldiers of the Republic, in that terrible moment,

regaining their lost ground with one last effort, charged the Janissaries with the fury of desperation; the storming party was trodden down, swept before them and hurled into the ditch below. On the following day Hussein, induced by the reports of a fugitive Greek, who represented to him the weakness of the garrison, commanded another assault on the same bastion. The works constructed by the besieged to repair the breach were blown down by three fourneaux, and again the Osmanlis advanced, animated as before by the voice and example of Hussein. In the thick of the *mêlée*, some barrels of gunpowder accidentally exploded. Both Turks and Christians, fearing a mine, fell back from the breach and the rampart, for a brief space, remained deserted. Some faint-heart official, hastening to Moncenigo informed that the place was lost and recommended him to retire to the royal galley in the port for safety. Indignant at this pusillanimous advice, the Captain General struck him with his cane, and calling aloud on every one who had a heart to follow him, hurried on through the streets, inflaming all with his voice and carrying along with him a crowd of people, artizans, sailors and even women armed with stones, all answering with cries of excitement and loud cheers his stirring appeals to their loyalty and courage. At the same time came up the feudatories under Zeno, and a body of French auxiliaries led on by the Sieur de Fire, a young hero of noble aspect, says an eye witness, and approved valor. The Moslems gave way and the town was saved. Great numbers of the citizens and towns people were killed in the breach, among them a Friar of the Order de Predicatori and his brother a priest. The gallant De Fire, while combating with a pike, was also shot through the head. A mine had been run by the Turks under one of the curtains and intended to be fired during the assault, but a Greek Monk, praying

alone in a neighboring Church, heard the men working below, and the mine was discovered and destroyed.

Thus was the town saved from imminent peril. Some minor assaults followed, but the great pressure was over, and the besieged breathed again. Very remarkable as an episode was an attempt to storm the Martinengo breach by the Spahis or Turkish cavalry; an unprecedented and fool-hardy piece of daring on the part of these brilliant horsemen, said to have been called forth by the taunts of the Janissairies at their comparative inactivity during these repeated assaults.

On the 10th of October the rains set in. The Turks withd ew to their entrenched camp, about half a mile from the city, leaving only four batteries, one towards the sea, to annoy the shipping, another in front of San Demitri, a third directly opposite Vetturi and a fourth at San Pantaleone in face of the Martinengo. The besieged came out with drums beating and flags flying, took possession of all the outworks, repaired the breaches and restored the walls.

In August of the following year, 1649, the lines of the besieged were extended as far as the Bethlehem bastion. Violent assaults were made in the last days of August and beginning of September. The Turks kept possession of a demi-lune for some hours, but were at length expelled with loss. Hussein, after vainly tempting the fidelity of Moncenigo with a promise of the kingdom of Jerusalem, and despairing of immediate success, withdrew his whole forces in 1650, to the hills of Ambrusta overlooking the town from the South, and erected the spacious fortress subsequently known as Nuova Candia.*

The Venetian chroniclers make mention of a certain Thomas Middleton, master of the ship Elizabeth Marie, chartered by the Republic, who in the summer of this year

*See Nani II, 141.

beat off a squadron of Turkish gallies, and was received in Venice with marks of honourable distinction.

And so months and years passed on, the siege frequently relaxing in vigor, but a watchful eye being ever kept on the town and its inmates. Sorties and skirmishes were of almost daily occurence, neither party appearing slow to take the other at disadvantage. In 1651, Moncenigo was deprived of his command through the jealousy of his rivals, to be restored within two years afterwards. In 1654 he died, a hero worthy of the days of Dandolo or Victor Pisani. In 1660 an attempt was made to storm the Turkish position at Candia nuova, weakened by the withdrawal of a large body of troops under the Pacha Catterzogli. The first onset was successful, and the prize seemed already secured. But the Venetians while disordered and plundering in the vicinity were alarmed by a sudden cry of "the Turks !" and seized with an unaccountable panic fled in the wildest confusion. The Captain General with a corps of reserve vainly endeavored to stay the fugitives. In the list of those who on this occasion "diedero le gambe al vento," as Brusoni has it, it is an unpleasant surprise to find the name of one Major Thomas, an Englishman. As to who or what he was the chronicler says no word more. "Requiescat in pace."

The Empire of the Ottomans, at this time divided by faction, vaccillating in policy, and to all appearance tottering to its fall, was restored by the talents and energy of Mehmet Kiuprili, so called from a village of Dalmatia whence his family originated, who became vizier in 1656. With wonderful activity he banished the factions, reduced the discontented to obedience, covered the seas with his armaments, and revived everywhere the drooping forces of the empire. To the Venetian Secretary Ballarini he tendered peace with the Republic, but on humiliating terms,

which the Senate at once rejected, expressing at the same time their desire for an adjustment, but on widely different conditions. The wrath of Kiuprili exploded in severe invectives against the unfortunate secretary, and it was only by the calm forbearance of the latter that he was at length restored to favor. But to the Republic, the accession of Kiuprili, his lofty pretentions and unquestioned talent, appeared significant of coming ills. Ambassadors were in consequence sent to most of the Christian courts. Among others, Giovanni Sagredo was sent in 1657 as ambassador to Oliver Cromwell*. The astute protector had however

* It is curious to see how a Venetian historian, writing within twenty years after Oliver's death, speaks of our sturdy protector. "Cromwell", he says, "had attained "to such a height of power, that holding subject the kingdoms of Great Britain, he "made himself feared by all states both far and near. Of ignoble origin obscure "education, he had advanced from a small command to the supreme generalship of "the army, by whose aid, having condemned his king, abased his rivals, exiled those "whom he suspected, and oppressed the parliament, he reigned under the title of "protector, and with absolute tyrannical sway. He was not without a shew of excel-"lent qualities, zeal for religion, valor in arms, prudence in counsel, and was more-"over a lover of the people and defender of the right. But all this was either simulated "or false; for conscience, though the most precious of possessions, is the most frequently "assumed for venal purposes. At this time, hungry with ambition, in plenitude of "power, he not only trod under foot his own people but threatened foreign powers, "and holding the kingdom quiet with an admirably disciplined army, ruled the seas "with formidable fleets. The Republic (of Venice,) so long as a shadow of the royal "dignity had appeared remaining, had never vouchsafed either to the rebels or the "protector the smallest correspondence, but now that every trace of the old dominion "seemed obliterated it was thought fitting first to send missives and then following "the example of other potentates to send over Giovanni Sagredo, cavalier, as special "ambassador to re-establish the friendship formerly existing with the monarchy and "to induce Cromwell, immeasurably fond of glory, to signalise himself by a powerful "expedition against the common enemy. But, however, avid of fame, yet attentive "only to self-interest and fearing that the commerce of the nation might be disturbed

no mind to embroil himself in this great passage of arms between the East and West. Possibly his commercial relations with the Genoese made him averse to befriend their bitter rivals. But their embassies to other courts met with greater encouragement, and the Senate after a consideration of the terms offered by the Porte, resolved to continue the war to the last breath, "di continuar francamente la guerra fino all' ultimo sospiro," a resolution applauded by every subject of Venice, and supported by the contributions of all, from the aged Doge, Bertucci Valier, to the poorest artizan. Once more then the old Republic, though bowed with centuries of toil and loss, girt up its loins for the struggle; as a scarred veteran, who catches the advancing din of arms, and shaking off in a moment all thought of age, addresses himself with stern composure to the inevitable fray. Not in vain had been the example of the Doge Contarini, who, in the war of Chioggia, being then fourscore years old, headed an attack in person and drove back the Genoese from the threshold of the City. The spirit of Contarini was yet strong in Venice.

But some brief breathing-time was yet allowed. The rising difficulties between the Sultan and the Emperor Leopold and the war in which they resulted, diverted for a few years the attention of the Porte. Achmet Kiuprili, who succeeded his father in 1661, and seemed to have inherited all his talent and energy, conducted this war with uninterrupted success, until, in 1664, he was routed at St. Gotthard, on the Raab, by Montecuculi, the Imperial Field-Marshal, who was assisted by the Comte de Coligny, the last scion of that famous house, with six thousand

"by the Turks, he replied at length to Sagredo's civilities, but in answer to his solicita-"tions let fall only a bare uncertain hint of possibly affording the Republic a succour "not wholly despicable by humiliating the Barbary corsairs." Thus far Battista Nani.

French auxiliaries sent by Louis XIV. headed by the young de la Feuillade, and comprising the élite of the noblesse of France. This victory saved Austria and arrested Achmet on his way to Vienna. Ten days afterwards, terms of pacification were arranged and the peace of Vasvar was the result. Rid of this enemy, the Sultan now turned his attention to the war with Venice. At Stamboul, the voice of the people inflamed, by accounts of the Venetian preparations, was loud for a prompt termination of affairs in Candia. Obedient to the commands of the Sultan, though somewhat reluctant to leave himself exposed to the attacks of his enemies at court, Achmet left the capital in the month of May, 1666. From Negropont he sent over four thousand Janissaries with their Aga, and on ascertaining that the passage was clear, set sail himself from Malvasia on the 28th October and in a few days landed safely at the port of Canea, bringing with him four thousand more troops, abundance of gold for their pay and a quantity of metal for the casting of cannon.

The year 1667 opened gloomily on the city of Candia. Rumours of the approaching armament had reached the inhabitants. The succors afforded by the European States were too scanty and irregular to form any counterpoise to the vast levies of the Moslems, which poured in unceasingly and more than supplied the severe losses of the besiegers. On the twenty-seventh of April, the town-people beheld from their walls the Egyptians under Messir-Bey defile into the plain. On the fifth of May the Janissaries with their aga-general, were seen to encamp to the right of Candia Nuova; and on the twenty-second, Achmet himself appeared with his splendid suite, received with a general salute from the Turkish guns. On the twenty-fourth, the citizens saw with astonishment the Turks demolish in an hour the fortifications at Candia Nuova, erected with immense toil

seventeen years before. The materials were carried to the valley of St. Gioffiro, on the west side of the town, henceforth the head quarters of their forces which already numbered forty thousand men, and were subsequently swelled to seventy thousand. On the following day the Janissaries took up their ground opposite Martinengo, and the Defterdar Basha in front of the curtain between that bastion and Bethlehem. To Achmet Pacha, field vizier, and to Silifecar Aga was confided the conduct of the approaches against the Moncenigo outwork. To their right, again were stationed the Begler-Bey of Roumelia with the European Osmanlis, and the Pacha Catrezogli towards San Dimitri. The first battery immediately opened its fire on the Martinengo bastion. On the 27th a second opened on the Panigra and a third against the Bethlehem. Within the following week, a fourth and fifth were added; all mounted with guns of unusually large calibre and throwing shot of sixty, ninety, and even a hundred and twenty pounds weight. The fiery storms raged day and night without intermission. The rains of winter produced no cessation. Colonel Zanotti writing from the town on the 28th July, says: "Day and night blood is shed, but in "two months the enemy has not taken a single outwork, nor "will do so without severe loss. Sleep is banished from "the eyes of all gallant men, the fatigues are incessant, "the sufferings great, the peril greater, no one being "safe in the churches and houses, still less in the streets. "Incessantly shells are falling, cannon thundering, and "stone and darts hurtling in the air." The town itself became a heap of ruins. "Nella città," writes the historian "ogni fabrica demolita, gli habitanti vivevano nelle "caverne." They lived many of them in dens and holes of the earth. The garrison was reduced from nine thousand to about half that number. The outworks of Sant Andrea

were swept away like chaff, and innumerable stockades rose everywhere to prevent sorties from the town. But the warfare underground was even more singular and terrible. Far down in the earth, in gloomy and wide-branching galleries, the sappers of both sides frequently met, lighting the darkness with hand-grenades and closing in murderous strife. The gallant Marquis de Ville, withdrawn by the Duke of Savoy, was replaced by the celebrated Marquis de St. André Montbrun, who had been in most of the famous sieges of his time. He had never seen a siege like this. He called it a war of giants. From the narrative of the Marchese Annibale Porrone, who served in the town it appears that in 1667, the four bastions Bethlehem, Panigra, Saint Andrew and Sabionera were attacked, but in the following years the attacks were confined to the two latter, which were indeed the weakest, having no outworks of any consequence and the ditch being but shallow. The year 1668 was fatal to many Venetian commanders. The General Bernard Nani was killed by a musket-shot on the 22nd June, Francesco Battaglia, Duke of Candia, on the 3rd October. Eight marchesi, thirteen colonels, eight lieutenant-colonels and four eminent engineers, Soubatiers, Quadruplan, Monpesson and Zeno, were also among the slain. On the 13th July the magazine near the Church of San Pietro exploded. On the 26th August, three attempts were made to storm the St. André breach: the assailants finally retired leaving two thousand dead. Great as were the losses of the besiegers they were rapidly restored by the constant arrival of reinforcements. The sultan in his impatience, advanced towards the Morea, and Achmet, knowing his own head was at stake, sacrificed his forces without scruple. A sudden attack of the Turks on the seaward side of the Sabionera nearly resulted in the capture of the arsenal: it was saved by the efforts of the

Provençal levies. The October rains coming on, and the sea being driven inshore by the vento di tramontana, the approaches at this point were inundated and many Turks drowned in the trenches, but at the opposite angle of St. André the besiegers remained throughout the winter, frequently labouring breast-high in the water, and erecting a chain of redoubts on the rocky ledge along the shore. Towards the close of the year arrived a body of French volunteers under the Duke de Roannes, formerly Comte de la Feuillade, who had distinguished himself at St. Gotthard in 1664. With the impatient gallantry of his nation he insisted on heading a sortie, which, however daringly conducted, resulted in no benefit beyond the loss of a thousand Turks. Shortly afterwards he reimbarked for France. The defence of this year alone cost the Republic 4,392,000 ducats and 2,879,000 pounds of powder.

A gleam of sunshine appeared to usher in the year 1660. The hostilities between France and Spain having ceased, large reinforcements were promised by Louis XIV. In effect, the high-admiral, François de Vendôme, Duc de Beaufort, was sent to reinforce Candia with twelve regiments on board his fleet, under the command of the Duc de Navailles. The rejoicings at Venice were unbounded; and Pope Clement IX sent De Beaufort a rich standard on which was depicted a crucifix. On the 24th June, these reinforcements arrived, and despite of the remonstrances of Francesco Morosini, the captain general, a sortie was made on the same night, at the sabionera. Three lines of redoubts were carried by storms, but a few barrels of powder exploding by accident, the French in their turn were seized with a panic and fled in disorder towards the town. The unfortunate De Beaufort fell into the hands of the enemy: he was decapitated, according to the barbarous usage of the time; and his head, after being paraded in

triumph, was sent to the Sultan at Larissa. Disheartened and weak with illness, De Navailles, in a few weeks, to the astonishment and indignation of the Venetians, reimbarked, leaving the city to its fate: an example immediately followed by the German and Maltese auxiliaries and by the papal gallies.

Further resistance now seemed hopeless. So reduced were the garrison, that the Candiote women had frequently borne arms, and served side by side with the soldiery. Nearly eleven hundred women and children are said to have perished during the siege. Some of the main galleries were discovered to be filled with water and useless. The Proveditor General, Caterino Cornaro, was dead. Struck by the fragment of a shell, while ordering the defence with his usual energy, he had fallen back into the arms of his brother commanders, and with his last breath reminded them, that born in the bonds of religion and liberty, it was their duty to die for these. The captain general, it is recorded, on seeing the body of the hero, his old companion in arms, could not refrain from weeping. "Non potè astenersi di piangere." In our day, we could scarcely understand such tears. A dark shadow of mourning fell on all the city. Its tutelary deities seemed to be one by one departing.

So the end came at last. On the 27th of August a military council of the chief commanders was convened by Morosini. In a few grave and sad words he solicited their advice and asistance. The dispositions of providence he said, were not to be evaded. He knew the unconquerable valor of the few faithful hearts that remained, who were willing to attempt the impossible, to hope against hope. He saw around him the ruins of the city: not alone its splendor, but its very shape and form had departed. It had become a desert. They trod on the ashes of its defenders. For his own part, he would rather bury him-

self beneath these sacred ruins than survive unworthily the glory of so honorable a defence. He besought them to weigh maturely and prudently the condition of the city and what was due to themselves, their fellow-citizens, and their common country. A deep silence, broken with sighs, followed this discourse. Each looked upon the other, none caring to speak first. Many plans were at length submitted: but ultimately, in view of the impossibility of continuing the defence, it was resolved to cede the town if honorable terms of capitulation could be secured. These were accorded by Achmet, glad to secure the place on any terms, and the garrison with the inhabitants were permitted to withdraw in the ships of the republic, with their arms, ammunition, and effects; being allowed the first twelve days of fair weather to prepare for their departure.

On the twenty-fourth of September, the embarkation commenced. Fifteen ships and some smaller vessels sufficed to carry the remains of the garrison and the few surviving inhabitants. Even then, the unhappy citizens seemed pursued by the footsteps of some vengeful Erinnys. A storm smote them on their way: the greater part were drowned: some were cast on the coast of Barbary; a few only escaped, to tell in foreign lands the story of a struggle for hearth and altar, such as the world had never seen.

Such was the siege of Candia. It lasted twenty-one years, four months, and six days: from the 1st May, 1648 when the first breaching battery opened, to the 7th September 1669, the date of the capitulation. In that interval of time how many changes had swept over Europe! The head of a king of England had rolled upon the scaffold; a lord protector, "omne sacrum rapiente dextrâ," had converted his sword into a sceptre, and ruled with a despotism remarkable for its unsparing energy: to be followed by a Restoration, whose transports evinced the inex-

tinguishable loyalty of the nation. The thunder-peals of the Fronde had long since died away into silence, and Mazarin and the Queen-mother were mouldering in their graves. Ibrahim and his minister Mehmet, prime movers of the Candian war, were mute and powerless now. Old land marks had been removed, old institutions swept away, and from the receding waters a new world had arisen, green with hopeful promise, but no longer the same. All had changed, but this siege had lasted on through all. Within these walls a generation had grown up amidst the unceasing din of arms. The children born at its commencement had become men and fought beside their fathers before its close. History has to record few such instances of patient endurance, of unshaken fortitude, and of that pure, unselfish patriotism which ennobles and sanctifies even war itself.

ARTICLE 15.—*Notes on the Resources and Capabilities of the* ISLAND OF ANTICOSTI. *By* A. R. ROCHE, *Esquire.*

[Read before the Society, 4th October, 1853.]

In the midst of the progress which is going on through out British North America in reclaiming the wilderness and in seeking out and developing new sources of wealth, it is a matter of astonishment to those who observe that progress with a view to increase it where it already exists, or to introduce it where it has not begun, that no account has been taken of a valuable island, large enough to become a province of itself, lying nearly in the centre of our North American colonies, and at the threshold of the most important colony of the whole; that, while all is life and healthy activity about and beyond it, and a commerce, second hardly to the commerce of any one channel in the world, is carried past its shores, the seasons roll on without bringing to the latter any change in that state of desolation which invests it with frightful yet imaginary terrors, and which has done more to injure the reputation of the St. Lawrence navigation than all those real dangers upon the main shores of the river and gulf, where so many gallant vessels have been wrecked and so many valuable lives have been destroyed.

Various circumstances have combined to give the worst character for the dangers of its coasts and for the inhospitality of its soil and climate to Anticosti, the island which

it is the object of the writer of this communication to rescue from the state of neglect in which it has existed up to the present moment: a state which not only makes it useless to its proprietors and to the Province of Canada, of which it forms part, but which renders it injurious, and to a certain extent, destructive to the best interests of the latter.

Among the circumstances which have repelled all proper inquiry and all enterprise from Anticosti, and which have done so much to injure the province by giving a worse character to its great outlet than it really deserves, are the disasters from famine, which occured there before provision posts were carefully kept up, and the opinion which has hitherto prevailed, that a greater proportion of vessels have been wrecked upon the island than have been lost in any other part of the river or gulf. Thus the mariner has been taught to regard his approach to Anticosti with intense dread, the island having been described as presenting the greatest dangers to him when afloat, and as affording no susterance for him if cast upon its shores. But, whatever unfavorable conclusions have been drawn from a recollection of the deaths from famine which took place there many years ago, and however far the opinion of the dangers of its coasts may have been received as a faithful one, those conclusions and that opinion have been based upon unsound foundations and been supported by erroneous comparisons, and have equally borne injustly upon the conditions and prospects of the island.

Those, who, from a consideration of the former disasters, and of the few and superficial examinations which have been made along the beach, have pronounced the soil and climate of Anticosti to be unsuited to the growth of any of the fruits of the earth, have lost sight of the fact

that persons cast ashore on any uninhabited place, (not situated within the tropics, or, at least, not abounding with wild and nourishing fruits), would starve to death if left without supplies, and without the means of removal to where they could be procured, and, that, in an equal state of neglect and solitude, even England would be found as inhospitable in regard to food as Anticosti has proved to be upon one or two occasions. That the latter should be condemned upon the result of the exploration of two or three spots along the beach, is also as unjust and absurd, as if the whole of England had been declared barren and useless, from an examination of a great portion of the shores of Cornwall, or from the appearance of the bleak and tree-less country in the neighbourhood of Brighton. Assuming, however, that all were true which has been said of Anticosti, that its soil is incapable of producing anything in the shape of food, still, if it can be shown to contain other resources, which may be employed in industrial and commercial pursuits, and which may be exchanged, not only for food and raiment, but for all the necessaries, and even the luxuries of civilized life, sufficient will remain to convince every intelligent and unprejudiced person, that it can be made to support, and that it will, (at the present rate of progress of British North America), probably contain, at no distant period, a considerable population. That it is not only capable of yielding food, but that it possesses natural products and resources, which may be turned to account, and be exchanged for all that can be required to sustain a population, will be presently shown, as soon as the other bugbear, the reputed dangers of its coasts, shall have been disposed of.

To those who have drawn conclusions unfavorable to the island, from the number of wrecks which have been

reported to have taken place upon it, it is necessary to point out, that the wrecks, which in returns appear so formidable in the aggregate, under the head of "Anticosti," have not occured at one spot, but at many spots widely separated, extending over a distance of 320 miles, that being the circumference of the island, and consequently the extent of coast front, not taking into account the indentations caused by bays, creeks, &c. Take the same length of coast upon any part of the main shores of the river or gulf, and it will be found, upon proper inquiry, that six times as many wrecks have occured within it each year, as have for the same period taken place upon Anticosti. Instead of the wrecks upon the latter having been compared with the number of wrecks spread over the same extent of coast on the former, they have been generally regarded as having occurred at one spot, and have been compared with those only which have happened at some one place on the main shore of the river or gulf, of a few miles, or of less than a mile in extent, lying in the course of fewer vessels, yet wrecking annually nearly as many. From an estimate, made by the writer of this communication, of disasters in the River and Gulf of St. Lawrence, during the ten years ending November, 1849, it appears that half as many wrecks occured upon the Manicouagan shoals, as took place upon the island in that period, and that Cape Rosier, Matane and Green Island each wrecked upwards of a third of the number of vessels, which were stranded during the same period upon the whole of the 320 miles of the much libelled coasts of Anticosti. The Manicouagan shoals Cape Rosier, Cape Chat, and other spots upon the main shores of the river and gulf, are places not only much more to be dreaded by the mariner than Anticosti, on account of the number of wrecks which occur upon them,

but in consequence of the great loss of life, which sometimes accompanies these wrecks, while, from the shelving nature of the beach at Anticosti, there are few instances recorded of wrecks upon the latter having been attended with loss of life. While the circumstantially related, and carefully preserved account, of the fate of the crew of the Granicus, wrecked in 1828 near Fox Bay, (who, in the course of a long winter, died from famine), has created in the minds of many, who adopt, without reflection, any popular fallacy placed before them, a belief that every poverty of soil, every drawback of climate, and every danger of coast must belong to Anticosti, those greater dangers and those more numerous disasters upon the main shores of the St. Lawrence, attended with greater loss of life, have been almost entirely lost sight of, or if thought of in connection with the former, have been set down as unimportant, when compared with the unfairly estimated disasters and the imaginary dangers of Anticosti.

The evil reputation which still hangs over the island, became attached to it many years ago, before its coasts were thoroughly surveyed, when it was laid down in the chart as being many miles shorter than it actually is, in consequence of which many vessels ran upon it in places where deep water was supposed to exist, and before light houses were placed there, since the erection of which and the late survey of its coasts, wrecks upon the island have become less frequent. Most of those which now occur there, are caused by the neglect of using the lead in foggy weather, many of them through the incapacity or drunkenness of masters, who, generally, are shamefully underpaid, and some of them through design, for the purpose of cheating the underwriters. Of these latter cases the Insurance offices are perfectly aware; but, instead of endeavouring to meet them by preventive measures, they

increase the rates of insurance so as to cover such losses by estimating for them in a certain proportion to the whole; thus making the entire trade pay for the dishonest acts of the rogue. This having the effect to increase the price of freight, by which the public are the sufferers, in having to pay a proportionally increased price for all articles imported, the Government should in future institute a strict inquiry into the loss of every ship in the river or gulf, by means of a naval police, and they empowered to inflict punishment, where criminal design, or even gross carelessness or drunkenness, may be proved to have attended such loss. Those masters, who desire to lose their ships, generally select Anticosti for the purpose, because they can always manage to run them ashore there without any danger to life, and without much risk of the circumstances attending the act being witnessed or understood by persons on shore; and the provision posts being now well supplied, there is no danger, as there was formerly, in their suffering from the want of food. Thus many of the wrecks which take place there, are produced in consequence of the ease with which a vessel may be beached, with safety to life, on many parts of the island, and not through its dangers of coast. In regard to the latter, those masters, who know the coasts of the island well, generally make free with them, (unless there happen to be a fog), in perfect confidence and safety, by which they gain headway much faster than by keeping in the centre of the channel, or along the south shore of the mainland. To whatever extent plausible reasons may have once given a bad name to Anticosti, there is no just reason for that name being perpetuated; and those, who yet view the island as it was regarded shortly after the wreck of the Granicus, can neither comprehend the unjust grounds upon which it was then condemned,

nor appreciate the importance to every country bordering upon the St. Lawrence, of many recent events, attending the rapid progress of the trade and general prosperity, which, with the exception of Anticosti, is going on in all parts of British North America. That the island should participate in that progress, it is necessary to divest it of the evil reputation through which is has been hitherto blighted: and this will be best accomplished by making known, in addition to what has been already advanced in its behalf, what it has yielded to the trifling labors of agriculture which have been attempted upon it, what its climate has been found to be by those who have resided there for many years, and what its natural resources and its important advantages of position really are.

The island lies W. N. W. by E. S. E., between the 49th and 50th parallels of North latitude, and the 61st and 65th degrees of West longitude, about four hundred and twenty miles below Quebec, three parts of it being in the gulf, through which it stretches out towards the south-west coast of Newfoundland, and the remaining part in the river, the waters at the entrance of which it divides into two channels. It contains nearly two millions of acres, being upwards of one-fourth larger than Prince Edward's Island, which is a province of itself, with its Lieut. Governor, its legislature and a population of eighty thousand souls. It is about one hundred and thirty miles long and thirty-five broad in its widest part, which is at the South West Point, nearly in the centre, whence it gradually narrows to both ends, the one terminating in Heath Point, with Fox Bay lying a few miles round the point upon its northern shore, and the other end terminating in West Point, with Ellis Bay a few miles short of it, looking toward the south. Thus there is a harbour upon each side and at each extremity of the island; but

Ellis Bay is better situated for the general shipping of the St. Lawrence, has greater depth of water, and is much more spacious than the other, being about two miles wide and four deep, with good anchorage. The excellent position of the island in regard to ships, commerce, &c., becomes at once apparent, when we consider that every vessel must take either of the channels formed by Anticosti, upon entering or leaving the river, whether having passed from the Atlantic, or intending to pass to that ocean, through the Straits of Belleisle, (now coming much into use, and about to be lighted), through the more frequented passage between Newfoundland and Cape Breton, or through the Gut of Canso, or whether running between Quebec and those portions of Canada, and of the Lower Provinces, lying upon the Gulf of St. Lawrence. In taking either of the channels formed by Anticosti, vessels pass close to the island, in consequence of the moderate breadth of the northern one, and of the strong south-east current which always runs along the southern channel, to avoid which, and the risk of being driven upon the truly dangerous coast of the south shore of the gulf and river, where, for several hundred miles, there is no harbour or place of shelter for any craft larger than a schooner, and where, for long distances, there is not one foot of beach outside the perpendicular cliffs to land upon, vessels generally stand out till they make the West Point of Anticosti, close to which is situated the convenient harbour of Ellis Bay, occupying a spot nearly mid-distance between the northern and southern banks of the St. Lawrence, and of easy access from both channels of the river. Considering that about two thousand vessels from Europe alone, will have made this point in the course of the present season, some slight idea may be conceived of the capabilities of position attached to the island, and in particular to Ellis

Bay. The inner anchorage of this bay has a depth of from three to four fathoms at low water, with excellent holding ground, (gravel and mud), is of as large capacity as the harbour of Montreal, and has been found, by experience, to afford perfect shelter, in all winds, to vessels of upwards of 500 tons; while the outer portion of the anchorage could be materially improved at a trifling expense, so as to be able to contain in safety, during all winds, almost any number of vessels of the largest size. Docks, with a patent slip, &c., could also be easily constructed there, which would be admirably situated for the repair of vessels, stranded or receiving other damage throughout the lower St. Lawrence, most of them becoming broken up by the action of the sea, and, in some cases, dismantled by wreckers before they can obtain assistance from Quebec, or the intelligence of their condition can be conveyed there; which port, strange to say, is the only place from the Atlantic to Montreal,(a distance of upwards of eight hundred miles), where vessels can be properly overhauled, or be supplied with the commonest stores, such as anchors, chains, sails, &c. For steam tugs, employed for the relief of vessels in distress, Ellis Bay might also be made an excellent station. With the facilities there for procuring shelter for our shipping in a portion of the St. Lawrence, where a spacious and deep harbour is more wanted, than in any other part of the river or gulf, it is astonishing that no attention has yet been directed to that spot. This neglect, however, cannot long continue. It could be made, not only a fine commercial harbour, but also an excellent naval station, in the most convenient and central spot for commanding, with a few steam-vessels or gunboats, the two entrances of the river, and for sending out cruisers up the latter, or to any part of the gulf. And it is not impossible that the want of such

an armament in our waters may be felt before the termination of the present difficulties in Europe. For the good order of those engaged in our fisheries, (whether foreigners or our own fishermen), which, under the reciprocity treaty, will be much resorted to by the Americans, some of the most valuable of the fisheries being in the vicinity of Anticosti, the presence there of such a force would be very useful. Its influence as a check upon "wreckers," (who swarm in the St. Lawrence more than is generally supposed), might also be enlarged upon. For these objects of commerce, of defence and of police, the fine harbour of Gaspé Basin, (situated twenty-five miles from the gulf), is too much out of the way, besides which a fair wind for taking a ship out of it, and of its out-let, Gaspé Bay, becomes a head wind, as soon as it becomes necessary to tack to come up the St. Lawrence. For the same objects, the harbours of Mingan and Seven Islands, upon the north shore of the river, are as much out of the way, and are too long closed by the ice. As for the improvement of Ellis Bay, it appears that they need be very slight to make it one of the finest harbours in British America: merely the erection of piers upon the flat limestone reefs running out from Cape Henry, and Cape Eagle, which form the entrance, these reefs being uncovered at low water, and already affording a considerable shelter to the outer-anchorage of the Bay. In magnitude and cost, these improvement could not be compared to what has been recently accomplished in the harbours of the Bahamas and Bermuda, by labor and science combined. Bésides the advantages which have been glanced at as belonging to Ellis Bay, some of the best soil, and some natural meadows, producing excellent grasses, six feet high, are found upon its shores, where the resident in charge of the provision post, grows every

description of vegetables; but wheat, or any other grain, has never been tried in that part of the island. It is also stated, that, within a few miles of the bay, wild hay could be cut sufficient to feed a thousand head of cattle during the winter. Nor is this spot barren in scenery; for, upon approaching it, a most pleasing view is obtained of the spacious bay, having in all parts a fine beach, which at each side is bounded by wooded cliffs, those on the east side showing table land and other heights beyond, and at the head of the bay the beach gently rises and expands into a slightly rolling country, containing forest and meadow land; the whole being relieved in the distance by two hills of moderate height, covered with trees. Near the centre of the bay, a few yards from the beach, stand the buildings, the garden and fields of the resident, close to a picturesque trout stream. When Anticosti shall be properly known and occupied, this spot will probably become the resort of many of those, who now seek health or recreation, at the less bracing and less interesting watering places upon the main shores of the river; and of the salubrity of the climate there can be no doubt, for all who have resided there, describe it as being the most healthy place in the world. The first seigneur, (to whom it was granted in 1680 for services rendered to the Crown of France), used to reside every summer upon the island, and it is supposed that he was buried there. At this spot there are many substantial elements for the growing up of a large and flourishing town, some of which are alluded to in other parts of this communication.

For large schooners there is excellent shelter at Fox Bay, at the north-east end of the island, and also at the South West Point, where it is quite practicable to make a harbour of refuge for the largest ships; which would be of great use to home-ward bound vessels in the Autumn,

whenever south-east winds set in, to run into and anchor, instead of being driven back for several hundred miles, and having to encounter again, under the worst circumstances, the most dangerous part of the whole navigation between the Atlantic and Quebec. There are also several good roadsteads, such as Bear Bay, situated on the north side of the island, sheltered from most winds, with good holding-ground; and there is shelter for schooners at the entrances of many of the rivers, some of which are navigable for small boats, or canoes, a considerable distance. Observation River, lying five miles west of South West Point, has sometimes six feet of water at the entrance; and there is hardly a mile of coast on any part of the island without its stream of fresh and delicious water, many of them proceeding from lakes, one of which, at the head of Observation River, is supposed to be nearly twenty miles long and several broad. Some of the rivers have very high banks, with very beautiful falls, and excellent mill sites, and these falls have a good supply of water during the whole summer. The island on the south side generally rises from about twenty to sixty feet above the beach, (but at the entrance of Observation River it is between 200 and 300 feet high), and is nearly level to the centre, where a range of moderate sized hills appear to run its entire length, and upon the north side to terminate in steep cliffs, It is mostly covered with a thick forest of trees, stunted near the shore, (like those upon a great part of the coasts of England and of other countries), but which become gradually larger as they approach the interior, and are less exposed to the influence of the wind and sea. This is very remarkable upon some of the bays, where, at the exposed points, they are very small, and gradually increase in size from each side to the centre; those nearest the sea being some-

time quite white in appearance, from the salt which is thrown, and crystalizes upon them It is the stunted growth of the wood upon the sea shore, which has given a coloring to the reports of those persons, who, having landed upon the beach for a few hours only, have pronounced judgment upon the whole island from what they saw there. The trees are spruce, fir, red and white birch, ash, quantities of very fine tamarack, and upon the north side of the island, some good sized pine. With the tamarack and pine growing there, and the immense quantities of valuable timber drifted upon the island from Quebec and other places after every easterly gale, many ships might be built every year. Like the valuable meadows for cattle and sheep, which have recently been discovered in Minnesota in the "Far West," there are here many very fine natural meadows, producing rich grasses, five and six feet high; and in some parts there are alternate ranges of wood and open plain. On the south side of the island there are several peat bogs of some extent, and some salt marshes, caused by the overflowing of the sea at certain periods, which must tend to fertilize rather than to impoverish the land, and, near the South West Point, there are some large salt ponds, which, were labor plentiful there, might be turned to account in the manufacture of salt: a manufacture which would become of some value to a great part of our North American fisheries, which, as well as the whole of Canada, are now supplied with salt from England or the United States, and, for curing fish and provisions, bay salt, formed from the sea and from salt ponds, is the most valuable, In consequence of there not having been a sufficient supply of salt upon the island, an immense quantity of fish, caught at Anticosti last year, had to be thrown away; and, during the present season, the fishermen at Arichat, Cape Breton, were forced to sell mack-

erel at from six pence to ten pence a hundred, or to see them rot upon the beach, through not having enough salt to cure them with. This latter circumstance occured at a time when mackerel was selling at Boston for nineteen dollars a barrel. Some of the Bahama islands are retained merely on account of the salt ponds which they contain; and at Ceylon a large revenue is derived from the salt works carried on in that island. The importance of the trade in this useful article may also be understood, from the fact that two-thirds of the vessels, lately captured by England from Russia, were laden with salt. For the manufacture of this article, and for other pursuits, almost any amount of cheap labor could be procured from Metis, and other populous places, situated upon the south shore of the St. Lawrence; but if industrial pursuits were opened out there, and land offered for sale, settlers would soon be attracted to the island. Several persons, who have been engaged there for so many years in fishing and hunting, or in charge of the light-houses and provision posts, have already expressed to the writer their desire to purchase land upon it, and to combine agriculture with their present occupations; but, without any permanent interest in the soil, they have little inducement to use much exertion in clearing and cultivating it, or in attempting to improve the island in any way. It is from personal inquiry of many of these parties, as well as of others, who have resided there for many years at former periods, and from an examination of every authority relating to the island, that the writer is enabled to bring forward so many facts, in support of the views which he has adopted, in regard to its resources and capabilities.

Rearing of cattle and sheep at Anticosti, for the supply of those engaged in the fisheries, of shipping, and of the dear markets of Quebec, would, no doubt, pay very hand-

somely. While the natural grasses are as rich as any upon this continent, it appears that cattle can be left out to graze there longer than they can be at Quebec: a circumstance which has just been communicated to the writer by the present lessee of the island, who has at this moment several head of fine cattle of the Ayrshire breed, at the South West Point. But if the natural grasses should not be found sufficient for numerous herds of cattle, the famous tussac grass of the Falkland Islands, which delights in a salt atmosphere, and which has been carried to the Orkney Islands, and been found to flourish there, might be introduced. At the former it grows upon peat similar to that which exists at Anticosti. The seed of this grass has already become an article of profitable export from the Falkland Islands; and the grass is found upon many parts of the coast of South America, where wild cattle abound. When we consider that remote and inclement Iceland raises her flocks and herds, her sheep numbering 500,000, her horses 60,000, and her horned cattle 40,000, and exports the finest fleeces, also dairy and other produce, we have every reason to hope, that Anticosti, situated in the midst of the fisheries, which employ many thousand men, of a vast traffic, carried on by upwards of two thousand ships, and within easy approach of many valuable markets, may be made as profitable a grazing country as any portion of British North America. It was, however, at one time condemned even in this respect. Because some cows, which were taken down there some years ago, happened to die in the course of the winter, a report was immediately spread and generally believed, that cattle could not live upon the island: that there was some poisonous substance in the grass, or in the air, which must prove fatal to all cattle coming within its influence; and this belief is even entertained

by many at the present moment; yet, upon proper inquiry, it appears that they died from neglect alone, having been repeatedly left for several days together without food or water. Since that period cattle have been taken down there, and been found to thrive remarkably well. At the South West Point, both Mr. Corbet, the lessee of the island, and Mr. Pope, the light-house keeper, have several head of cattle, as well as pigs and poultry, all of which are in excellent condition. On the former, Mr, Corbet says, they look better in the spring than cattle do at that season at any place upon the St. Lawrence below Quebec.

Resting upon a substratum of limestone, the soil of Anticosti should be a warm one, and if cleared to any extent, and thereby exposed to the sun, and drained where it may require drainage, it would no doubt become a productive one. For the purpose, either of drainage or of irrigation, as the one or the other may be desirable, every facility is offered by the numerous rivers and rapid streams existing in all parts of the island. The composition of the cliffs alone, some of which, according to Capt. Bayfield, R. N., contain sand, clay and limestone, indicates that there must be good soil of considerable extent in many parts of the island, which only requires clearing and cultivation to yield very fairly; for, with these substances, and the fine mould of the vegetable deposits, which have been accumulating in the woods for ages, what better farming lands could be desired? In Prince Edward's Island, where the soil requires to be enriched, immense quantities of limestone are imported for that purpose from Nova Scotia. Mr. M'Ewan, who resided upon Anticosti for fourteen months, in the employ of the Hudson's Bay Company, (which Company, however, as well as the late North West Company, had no right to hunt and fish there), mentions that the cliffs rest

upon a foundation of limestone, that the second stratum is often composed of the cream colored clay, and sometimes of sand and gravel, and that the clay often reaches the top or surface, but at times is covered with a thickness of peat; the land in the latter case running into extensive plains. This peat, which produces excellent natural grasses, and also the finest vegetables, where they have been tried upon it, may be turned to many useful purposes. In Ireland a large "Peat Company" is in active operation, having a factory at Killberry, where they supply their furnaces entirely with peat or turf, and also manufacture from it the following articles: tar, oil, paraffine, naptha, sulphate of ammonia, charcoal and gas. A substance, from which so many articles, possessing powerful heating properties, can be produced, it is to be hoped will some day be made to supply one great want of the present age: cheap and compact fuel for steam-engines. Enough, however, has been shown to prove, that, instead of its presence at certain spots at Anticosti being considered as any drawback, the peat, which is found there, may be regarded as a valuable resource of the island; for what is now being accomplished with it in Ireland, may at some future period be attempted with it at the former.

Of the interior of Anticosti, Mr. Corbet, who has resided at the South West Point for ten years, and who, in his various excursions, has seen more of the island than any other person, describes the soil to consist generally of "black light soil, clay and sand," and states that, "from the immense quantities of sea-weed with which the shores abounded, he believes the land could be made to yield every description of farm produce. In the same statement he refers to what he and Mr. Pope have accomplished at the South West Point. The writer had, however, obtained a

similar statement from the son of Mr. Pope last autumn. At this spot, which Lieut. Baddeley, R. E., who visited it in 1831, declared to be the most barren and uninviting in the whole island, Mr. Pope grew last year the finest crop of oats, 300 bushels of the best potatoes, (the potato disease never having reached the island), and every other vegetable in perfection which is grown in Canada; and this he did upon a patch of land adjoining the bleak point where the light-house stands, where the soil consists of a description of black peat resting upon the limestone. Mr. Pope supposes, though he has never tried it, that wheat might be successfully cultivated in the interior, which has never been explored beyond ten or twelve miles from the beach, along the banks of some of the rivers, and then generally by hunters or fishermen; parties not likely to look for or to care about agricultural resources. How much, therefore, must still remain to be explored in an island 130 miles long by nearly 40 broad! But so long as oats and other produce raised there can obtain the present high prices in the Quebec and other markets, it will be of very little consequence whether wheat, which can now be purchased in Canada for less than an equal quantity of oats, will succeed there or not. Yet there are many persons ready to condemn, as utterly unfruitful and worthless, any place which could not number wheat among its productions. Of vegetables. Mr. Pope could have disposed of any quantity to ships bound to Quebec, which are often becalmed off South West Point after a month or six weeks' voyage, with a prospect of being nearly another month in reaching their destination. The supplying ships under these circumstances, especially when conveying cabin passengers and emigrants, may become a very profitable occupation to the settler. Vegetables, meat, fish, soft-bread, &c., could

be easily taken off to vessels in boats, as they are at Portsmouth, Yarmouth, and a number of other ports in England, under circumstances far less favorable, by bumboats, the owners of which realize immense profits.

The statements made by Mr. Corbet and Mr. Pope regarding the island, have since been confirmed by accounts received from several other parties, who have been engaged there in hunting and fishing at various periods during the last fifteen years, some of whom are still employed there. But not only do the present and the recent residents speak well of the island, but the accounts of those who have passed considerable periods upon it many years ago are equally favorable. Mr. Morrison, a person well known in Quebec, who, (having been previously employed at Anticosti by the North West Company), was sent there about fifty years since, to explore a portion of the island for the prupose of forming a settlement, after mentioning in his report the excellency of the soil, and the timber which he found there, including ash, large pine and tamarack, says: "I had a house erected on the south side of the island, around which we made a clearance, and sowed wheat, barley, and oats, all of which grew very luxuriantly and ripened. Vegetables and garden stuffs of every description grew remarkably well, and came to as great perfection as any I have seen in Canada. There is very good clay on the island, of which I made some bricks, and built an oven, and whilst there I imported some cattle from Nova Scotia, and found that they throve well." Why the explorations and labors of Mr. Morrison led to no result at that time, is thus explained in his statement, made in 1842, to the present proprietors of the island: "After I returned to Quebec and made my report, Mr. Grant, the then proprietor of the largest portion of Anticosti, at once came to the deter-

mination of settling it, and offered to me the superintendence. During the winter of 1804, I engaged by his directions eighteen men, intending to proceed with them to Anticosti in the spring, and to immediately set about cutting a road across the island; but, unfortunately, Mr. Grant died about that time, and the intention which had been entertained of colonizing the island was abandoned, a circumstance much to be regretted." Many statements equally favorable as to the agricultural capabilities of the island, made by parties, whose residence there for considerable periods, should give them some pretension to a real knowledge of its worth, in that and in other respects, might be quoted; but sufficient has been given, to convince every reasonable mind, that the island is not the utterly barren and miserable place, which so many, who have merely touched there, or have sighted it at a distance, have declared it to be. If it were what the latter would wish to make it appear, those who have resided for any time upon the island, would certainly not combine to speak well of it, and express a desire to continue there; nor would many of them have voluntarily made it their abode for ten or fifteen years.

While the accounts of these parties generally agree as to the timber and the nature of the soil, they represent the climate to be milder than that of Quebec. Mr. Wright, a surveyor, who wintered there in 1765, during what he then considered a very severe season, shows, by his observations taken there, that the thermometer only fell as low as 15 degrees below zero, and both Mr. Corbet and Mr. Pope informed the writer, that the winter before last there were only six weeks of sea ice in the neighborhood of the island. This mildness of climate when compared to that of Quebec, and of the opposite shores of the St. Lawrence, is easily accounted for by its insular position; the island being

surrounded upon all sides by a wide expanse of salt-water, the modifying effects of which upon climate in all parts of the world, even where the width of sea may be less than a mile, is well known to all who have ever considered the many influences, which will bear upon climate, irrespective of latitude. The island lying nearly east and west, and having highlands running its entire length, along its northern shore, much of its surface must be protected by the latter from the coldest winds, and, even among the range of highlands, there must be many green and sheltered valleys and slopes with a southern and western aspect. In regard to degree of heat and cold, its climate is much like that of Newfoundland; but it is not so subject to fogs. The navigation at the former is open for about six weeks or two months longer than it is at Quebec, and it is probable that, with properly constructed and properly manned steamboats, or with Lieut. Halket's boats, (so favorably spoken of by Lieut. Osborne, Captain M'Clure, and other Arctic navigators), a communication between the South West Point and the south shore of the St. Lawrence could be effected occasionally in the winter months, according to the weather and the state of the ice, which never extends across or blocks up the whole channel. The experience of recent, as well as of former Arctic navigation, should convince us of the practicability of the undertaking. A communication, during that period, could certainly be often kept up from the island with Mingan on the north shore of the river. When the island shall have advanced so far as to make the establishment of a winter communication with the main shore of importance, it would be advisable to employ for the purpose men who have served in some of our Arctic searching ships, or have belonged to some of the Greenland or Davis' Straits' whalers, who

could also be employed in the valuable whale and seal fisheries, which exist upon both sides of the island. In smooth weather a few of the enterprising, skilful and industrious Esquimaux would easily accomplish it in their *oomiaks*, and they would at that season be the best seal hunters which could be procured. And no natives of this continent are so susceptible of being civilized as these brave and estimable people. This is fully proved by the accounts of the abilities displayed by, and the gallant and devoted conduct of those who became interpreters to our several Arctic expeditions. Many men have obtained a monument to their worth, who did not deserve one more than Augustus, the invaluable Esquimaux interpreter to Franklin in his first and second expeditions; who, in an attempt to reach and assist Back in a third expedition, gave up his life rather than fail in his voluntary mission, after his companions, in dismay at the dangers encountered, had turned back to Fort Churchill, on Hudson's Bay. If a people, numbering many such as Augustus among them, could be planted in a civilized state upon the north shore of the St. Lawrence, whence many of them were cruelly driven two centuries ago, and be employed in connection with Anticosti, many human as well as useful and profitable objects would be accomplished by the settlement of the island. To return, however, to the difficulties which presents to the navigation of the St. Lawrence. Were the vessels in the Quebec trade constructed with a view to having to navigate a sea occasionally encumbered with ice, and were they commanded by men, who had made one or two voyages in a northern whaler, we should seldom hear of a shipwreck in the ice, consequent upon an early winter setting in, or upon an unusually late arrival of the spring: two events which have recently happened, and, together, have caus-

ed the loss of upwards of one hundred ships. Upon being beset by the ice last November, many masters of vessels, finding themselves in a difficulty which was quite novel to them, and for which they were entirely unprepared, became perfectly bewildered, and left their ships unnecessarily, while others immediately cast anchor, which was the worst step they could have taken under the circumstances, the drifting ice cutting the resisting vessels entirely through. Though the writer has made many inquiries, he has not been able to discover more than a very small proportion of officers or men, employed in this trade, who have ever made a voyage in a northern whaler.

It is now time to notice those resources belonging to Anticosti, which, being wholly independent of soil and climate, may be turned to immediate account. These resources principally consist of its sea and river fisheries, which, although comparatively neglected by Canada, may be classed among the most valuable fisheries of British North America.

In the recent report, published by the New Brunswick Government upon the fisheries of that province, mention is made of the valuable whale and cod fisheries existing upon the coasts of Anticosti; and it is stated that the Jersey houses fit out vessels to carry on the former upon both sides of the island, and up St. Lawrence as far as Bic, some of the whales, ("hump backs"), being seventy feet long, and yielding eight tons of oil; while the fishermen of Gaspé frequently resort to the east end of the island and take cod in great abundance. In his work entitled "Newfoundland in 1842," Sir Richard Bonnycastle states, that "the whale fishery is pursued along the coast of Labrador, in and through the Straits of Belleisle" [close to Anticosti,] "and that whales of all

sizes are taken, from the smallest finner to the largest *mysticetus*, or great common oil whale of the Northern Ocean, which occasionally visits these regions." It thus appears by these authorities, that on every side of Anticosti valuable whales abound; the pursuit of which, and of seals and cod, it is not improbable, could be carried on in winter as well as in summer, were the attempt to be properly made; but, without a trial, the undertaking may ever remain unjustly condemned as impossible. Should such an attempt be sucessful, it would not be the first instance of that being accomplished upon trial, which theory, timidity and prejudice had long declared to be impracticable. Here, again, the experience of our northern fishermen, and of the Esquimaux, who fearlessly encounter all difficulties and danger, of the ice and of the weather, and who fish in winter and summer, might be sucessfully brought to bear.

Of cod, Mr. Corbet, in his statement made to the writer, remarks that "one boat, with two good fishermen, could take off South West Point, or at Fox Bay, eighteen hundred of these fish in one day;" while Mr. Morrison states that cod, halibut, and a variety of other fish, could be caught all round the island in incalculable quantities, and that no finer cod is caught on any part of the coast of America, or on the banks of Newfoundland, than is to be met with there. To this may be added the testimony of Capt. Fair, R.N., of H. M. ship Champion, who states that he met a few shallops from the Magdalen Islands, at the east end of Anticosti, where they found cod in great abundance, and of excellent quality.

Of hardly less value than the former is the seal fishery, which could certainly be carried on in winter, as well as in summer, many seals being seen on the ice during the former season and in the spring, and thousands of

them being observed during the summer and autumn, at the entrances of all the bays and rivers, where they remain almost entirely unmolested. To show the value of this fishery in the gulf, the New Brunswick official report, already cited, bring forward an instance of a schooner engaged in it from Sydney Cape Breton, having cleared £14,000, within three weeks of her having left that port. Yet at Anticosti, where seals abound more than in most parts of the gulf, this fishery is at present almost entirely neglected; the Americans and others, who resort to its neighbourhood, being principally engrossed with the still more profitable cod and mackerel fisheries. For the storing and preservation of seal, whale and cod oil, the temperate degree of heat at Anticosti during the summer, is particularly favorable.

At the present moment the mackerel fishery is the most lucrative one in the St. Lawrence, and is the most extensively pursued; mackerel now selling at Boston for nineteen dollars a barrel, and at Halifax and Quebec for a few dollars less than that sum. No part of the gulf abounds with this fish more than the neighbourhood of Anticosti. Many schooners visit the coasts of the latter from the United States, the Lower Provinces, and a few from Gaspé, to carry on this fishery, in which they are very successful; and Mr. Corbet states that the mackerel he has seen in July and August come in shoals so thick and so close to the shore, that as many as one hundred barrels could be taken in one haul of the net. A few hours' work will thus sometimes pay the whole expenses of a schooner during the season.

Herrings, as fine as any in the world, are as plentiful about the island as mackerel; but, from the wretched manner in which they are cured, they obtain a much less price in the market, and are, therefore, comparatively neglected by the fishermen. To make this fishery as valu-

able as the former, a few of the Dutch North Sea fishermen should be engaged, who would introduce their mode of curing the fish, which has long obtained for "Dutch herrings." the highest price in every market in Europe. By adopting that mode, the Scotch fishermen are beginning to compete sucessfully with the former.

At the entrances of all the rivers and creeks immense quantities of lobsters are thrown up by the sea; the collection of which, and the preserving them on the spot for distant markets, or sending them fresh in vessels containing wells, to our home markets, might render this fishery a very profitable one. Eels are also very numerous and very fine, and are often collected by parties of Indians, who come over for the purpose from Mingan, and who obtain a high price for them from the Americans. Some of the halibut, which are found off the coast, attain the weight of three or four hundred pounds.

The caplin, which are now merely used as bait for cod, are so abundant around the island, that they are sometimes thrown up by the sea and cover the shore to the depth of two feet. Were they properly cured and exported, they would find good markets in Europe; or oil of an excellent quality could be made from them by the simple process of boiling.

The number of schooners which resort to the shores of Anticosti, from the United States, the Lower Provinces and the Magdalen Islands, in pursuit of the cod and mackerel, is so great, that there are sometimes as many as one hundred vessels fishing between the East Point and Fox Bay at one time, all of which are generally very successful. If these fisheries can be so profitable to extensively fitted schooners, (of from 40 to 150 tons), some of which come a distance of fifteen hundred miles, and have to bring every supply, including provisions and

salt, with them, how much more profitable would they become to parties residing upon the island, who would have their supplies upon the spot, and who could carry on their operations in boats. How important also to the latter, would become the trade which might be created with the former: the supplying them with provisions, often with fishing gear, and with every description of marine stores; and how soon would such a trade lead to more extensive transactions, in regard to the purchase of fish upon the spot, and the disposal of it in the best markets, and to a further trade in West India, South American and Mediterranean produce, obtained in exchange for fish, and being in great demand in Canada. It might also lead to the gradual rise, at different points of the island, of good sized villages, and ultimately of towns. Many large towns in various part of the world, which are now places of great wealth, have risen from elements quite as slight as these. Even the frozen shores of Spitz bergen may be pointed out, as having been, for upwards of a century, the site of a flourishing settlement supported by the Dutch whale fishery alone. Of this settlement of Smeerinberg on the island of Amsterdam, N. W. coast of Spitzbergen, Scoresby, in his "Artic Regions," thus speaks: "Such, indeed, was the bustle produced by the yearly visitation of 200 or 300 vessels, that the place had the appearance of a commercial or manufacturing town; and of such consideration was this village, that the incitement of an advantageous traffic drew a number of annual settlers to the place, for the purpose of vending such stores as brandy, wine, tobacco and other commodities in constant demand. Not only shopkeepers, but bakers and other artizans resorted thither. Thus the naturally barren and desolate shores of Spitzbergen were made to assume the appearance of a populous country; and such

was the flourishing state of Smeerenberg, that it was compared by the Hollanders with their famous settlement of Batavia, which was founded about the same time." But we need not confine ourselves to the past for examples as to what the enterprise and energy of man, properly directed, may accomplish in places the most inhospitable, or as to the advantages of carrying the fisheries on from stations planted in their immediate vicinity, the intelligence having this moment reached us of the extraordinary success, which has already attended the efforts of the gallant Arctic voyager, Capt. Penny, to establish a permanent whale fishing settlement upon the bleak shores of Davis' Straits.

Shore-whaling has been very sucessful at New Zealand, and may be made so at Anticosti, around which whales are so numerous that they are sometimes found stranded upon the beach. While the men engaged in the pursuit would be able to devote the whole of their time, from the first opening to the latest period of the season, to the capture of the whale, (towing each one ashore as soon as caught), their families could be employed in cutting up the blubber, extracting and storing the oil, preparing the whalebone, &c.; so that no useful portion of the animal would be lost, and the capture of the greatest number of whales would be ensured. The parties on shore could likewise be employed in making casks and other articles used in the "try-houses" for boiling the blubber. Under the usual system many opportunities of a capture are lost, in proceeding to and returning from the fishery, and much time is wasted in the extracting, stowing and disposal of the oil, while much that would be valuable, were it preserved, is thrown overboard, and a good deal of oil is lost by leakage. In regard to the fisheries generally, the advantage of being

able to cure the fish upon shore, in proper houses, instead of curing them carelessly on board, must be apparent to every one. What adds to the value of Anticosti as a fishing station, are the numerous creeks and rivers, affording perfect shelter for boats and schooners, with a fine beach to land upon, which are found on both sides of the island.

So long, however, as distant fisheries can be carried on with a profit, there can be no reason why Canada should not participate in the latter, as well as in the former, should she, with her large and increasing resources for sucessfully embarking in any undertaking, begin to evince that spirit of enterprise, which led the earlier colonists of the neighbouring States, to fit out vessels for the pursuit of the most distant whale fisheries, as well as to carry on in boats that which existed upon their own shores. Anticosti, where there is excellent accommodation for any number of vessels of from 300 to 400 tons burden, (the size mentioned by Scoresby as best adapted for the Greenland and Davis' Straits fisheries), might eventually be made, in regard to the great southern, as well as to the great northern fisheries, such a station for the fitting out of whalers, and for the exportation of their produce, as Nantucket and New Bedford have long been for the fitting out, and the reception, of the whalers of the United States.

Of the river and lake fisheries of Anticosti, Mr. Corbet, who leases them, as well as the right of hunting the whole island, but who keeps up a very small establishment, and consequently makes use of his privilege to a very slight extent, says: "I have frequently, along with two Indians, taken in the month of July, in one day, twelve hundred salmom-trout, and upwards of two hundred salmon, out of Observation River, near the South West Point, the

majority of the salmon-trout weighing four pounds, and the salmon from twelve to fifteen pounds;" and Mr. Morrison states, that the first day he went up Salmon River he caught, in a very short time, with a small net, from two hundred to three hundred fine salmon; and that, too, by confining his fishing to only two or three of the numerous holes to which salmon resort in that river. Even in winter Mr. Corbet has caught quantities of fine trout, by cutting a hole in the ice, and fishing with a hook. This gentleman owns a schooner, in which he sends the produce of the fisheries, and of the chase, obtained by him, to the Quebec market, where it commands a high price. The master of this schooner is one of many parties, who are desirous of purchasing land, and settling entirely upon the island, with which he has been connected for fifteen years.

Though all the rivers of Anticosti abound with the finest salmon, few of them are fished to any extent, in consequence of there being but a small number of persons residing upon the island, and those who come there not being prepared, and not having the right to fish in the rivers; which, with sufficient attention and judicious management, might be made almost as valuable as the best salmon rivers in Scotland, for each of which a rent is obtained of from five to fifteen thousand pounds, sterling, per annum. The markets for fish in the United States, being about to be thrown open to Canada, under the Reciprocity Treaty, will soon become quite as remunerative as any in Europe, and will consequently raise the value of our river fisheries to what is obtained for the most valuable of the former.

The porpoise fishery, which is sucessfully conducted at Tadousac, at the entrance of the Saguenay, each porpoise caught being worth £25, in the leather and oil

which it is made to yield, might also be carried on at Anticosti at a considerable profit, the latter being as well situated for the purpose as the former.

The hunting upon the island is of considerable value, though of far less importance than its fisheries. The animals consist of black bears, martins, otters, and the silver gray, the red, the black, and sometimes the white fox; all of which are very numerous, and for the skins of which Mr. Corbet realizes excellent prices in the Quebec market; those of the silver gray and the black fox fetching from £15 to £20 each. But Quebec being principally a mart for other and dearer markets, much higher prices would be obtained for the Anticosti furs, could they be sent to the latter markets direct; and this would be easily effected, were the settlements and establishments, contemplated in this article, made upon the island, which would create objects there of sufficient importance to attract vessels from various parts to its shores. The bears upon the island are quite harmless, and, living upon the rich berries and wild fruits, such as currants and gooseberries, which abound everywhere in the summer and autumn, are very good eating during those seasons. Deer were formerly met with, but have not been recently seen there. Fortunately, the island, like the country immediately north of Quebec, (though they abound still further north), is entirely free from wolves. There are mice, but neither rats nor frogs; nor are there snakes or reptiles of any description.

Great quantities of ducks, geese, partridges, and other fowl, resort to the lakes upon the island, some of which are of a species peculiar to England; and a duck, called the *muniack*, remains about the shore all winter. It is probable that the eider-duck, which frequents the main shore further north, will be found there; in which case eider-down might be made a profitable export from the island.

Thus, even in respect to food, Anticosti, in an uncultivated state, is not so inhospitable as it is generally supposed to be; for, with its fish, its bears' flesh and its fowl in abundance, what active sportsman is there, who could not often obtain a meal there, with his rod, or with his gun?

With so many other resources, it is of little consequence whether or not Anticosti shall be found to possess valuable minerals. There is no account of its ever having been visited by a geologist; but iron ore of great richness, and quartz are frequently met with on the island, and recently some substances have been discovered resembling mineral paints. Plumbago may also exist there, as it has been found among limestone of a similar character to that of the island upon several parts of this continent; and Mr. M'Ewan mentions having found freestone there, some of it as fine as water of Ayr-stone, and some as coarse as grindstone. The fossiliferous limestone, which exists in great quantities upon the shores in thick horizontal strata, is of so fine a grain and color, and so hard, that it is most deservedly classed under the head of marble. Were this marble quarried to any extent, large profits could be made by disposing of it to builders in the chief towns of the province, whose wealthy inhabitants are beginning to vie with each other, in the beauty of their residences, and the style of their living. To Quebec and Montreal it could easily be conveyed as ballast. Being very durable, as well as very beautiful, there is little doubt that, were it brought to those cities, in any quantities, it would be selected for many public buildings. The contemplated erections for the Government and the Parliament Houses could not be made more imposing in appearance, so far as the material is considered, than by the use of

this marble in their construction. It has already been used for several light-houses in the St. Lawrence besides those upon the island. Both Lieut. Baddeley, R. E. who touched at several parts of the island in 1831, and Sir Richard Bonnycastle, R. E., who landed at the entrance of Jupiter river in 1841, speak of the value of this marble. The former says, "its structure is crystalline, and its consequent lustre upon fracture is high; it is sufficiently hard to receive a good polish, and is sufficiently solid and massive to turn out some excellent ashlars, so that, whether it be desired for the construction of a house or for its interior embellishment, it is equally applicable." Sir Richard Bonnycastle states, "the limestone cuts well, and looks very beautiful, being, in fact a sort or marble;" and adds, "I procured some large and valuable encrinital remains, yellow blende, and some fine white marble, and have no doubt that a rich treat would be afforded to the collector who had leisure sufficient in this vicinage." A specimen of a stone, suitable to the purposes of lithography, found upon the island some years ago, was placed in the museum of this society, and many specimens of iron ore, quartz, marble, and curious fossils, have been obtained there upon various occasions. Anticosti having been evidently formed at the same period as the rest of North America, and not having been created by the alluvial deposits of the St. Lawrence, as, from its position, some might suppose, there is no reason, upon its being explored by a geologist, why some of those minerals and ores should not be found there, which are known to exist upon this continent. It is only very recently that coal, silver and copper have been discovered upon the western coast of Newfoundland, among a limestone formation similar to that of Anticosti.

Taken separately, the resources of Anticosti, as they are yet known, may not appear so important as those of countries more favored by careful attention, by settlement, and by a fair expenditure upon them of labor and science combined, under which their resources have been partially developed; but, viewed together, they cannot but be regarded, by any unprejudiced observer, as of considerable value, and as giving promise, (upon the introduction there of those agencies which have been successfully at work elsewhere), of becoming a source of wealth and prosperity to the whole province. No comprehensive view of the resources and capabilities of the island having ever been taken, is one reason why it has been so long neglected; and why, throughout its three thousand three hundred square miles of territory, it yet gives shelter to no more than some fifteen or twenty residents, distributed between the fishing stations of the lessee, the light-houses and the provision posts, all of which are situated upon the south side of the island; the fishing stations being at the South West Point and the entrances of Observation and *Becscie* Rivers, the light-houses at the East Point and the South West Point, and the provision posts being also at the light-house stations, at Shallop Creek, about half way between them, and at Ellis Bay. The state of desolation in which the island remains, is shown by the necessity for keeping up these provision posts for shipwrecked sailors, as, in former days, wells were dug, shady trees planted, and caravansaries maintained in the desert, for the relief of pilgrims and travellers by the Arab and Indian princes; but, unlike the deserts of the East, (though even there fertile spots have been often discovered and been made to "bloom as a rose"), Anticosti has hitherto been condemned to desolation, not on account of its being incapable of being made to sus-

tain a population, but because of the superficial examinations of its soil, bordering upon the sea shore only, which have been made from time to time, and of the reports and general rumours, based upon those examinations, similar to those unjust popular rumours, which have for many years kept back many other countries, since become known and now arrived at a flourishing condition, and which, until the last few years, condemned Newfoundland to be a mere fishing station. Even Prince Edward's Island, now the garden of our maritime provinces, was for a long period kept back by prejudices, as absurd and unjust, as those which long operated against the progress of Nova Scotia and Newfoundland, and which, up to the present time, have rendered Anticosti worse than useless: a terror to the mariner, and an inhospitable wilderness at the threshold of the province, frowning upon, and depressing in spirit, all who seek Canada by the route of the St. Lawrence.*

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* As there are few persons in England, or even in Canada, who do not still regard Newfoundland as possessing no resources beyond its fisheries, and who look upon Nova Scotia almost in the same light, the following extract is inserted here from the speech of Mr. Morrison at the meeting of the agricultural society, held at St. Johns Newfoundland, in 1842, and presided over by Sir John Harvey; as bearing upon the past condition and the recent progress of those countries, and upon the present state, and what may be the future progress of Anticosti: "Travels, voyages, histories, geographies, even school books, in which the name of Newfoundland is introduced represent the soil so barren, the climate so severe, as if nature had raised an impassable barrier to its agricultural improvement. Little more than twenty-five years ago the same prejudice that had been the bane of Newfoundland prevailed in Nova Scotia. The possibility of raising wheat, barley and other grain for the subsistence of the inhabitants, was ridiculed and scouted as chimerical. Fortunately there was one among them of experience in the improved system of Scottish agriculture, who roused the people by his appeals, led them to form agricultural societies, under the operations of which the insane prejudice that had so long existed against the soil and climate of Nova Scotia became dispelled: and in the history of no country has there ever been recorded

Should properly conducted, and sufficiently extended explorations be made at Anticosti, and commensurate exertions be expended upon it, results will be produced there, similar to those which have followed proper inquiry into, and proper efforts for developing the resources of Nova Scotia and Newfoundland: a fair proportion of good as well as of bad land will be discovered; the former will be made to yield every description of grain and vegetables which can be successfully grown in those countries, and to raise any number of cattle and sheep; while the entire island will be made to export, in addition to furs and fish, oil, tallow, tar, potash, dairy produce, and the finest ice from its lakes and rivers, and to support a large and a thriving population of fishermen, mechanics, traders and agriculturalists. But what the writer conceives to give more value to Anticosti, than its capabilities of soil and climate, or its many other resources, whether belonging to the sea, to the rivers, or to

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a more radical and instantaneous change than has been witnessed in that country. So in Newfoundland by following the example of Nova Scotia, lands have already been cleared and cultivated in many parts, north and south; a great portion of the substance of the inhabitants is now raised from the soil, and at a moderate calculation made from the statiscal returns in the last Census, the agricultural produce of the island is little short of two hundred thousand pounds per annum. Some of the farms, at St. Mary's and Placentia Bays, have thirty, forty and fifty head of horned cattle." Besides many other authorities to the same effect, Sir Richard Bonnycastle may be quoted, who, in his work upon Newfoundland, says: "Wheat is growing within a mile of the house I am writing in. It was sown in the fall of the year, and in this month of April has survived all the severe alterations of the winter. The poorest soil in Newfoundland is around St. Johns, yet wheat grows there. On the western side of Newfoundland," [opposite to Anticosti] "the climate is less severe; the land more rich in consequence of limestone prevailing, and is now known to be quite as capable of cultivation as Cape Breton, Prince Edward's Island, and Nova Scotia. Even the East coast might be made to support its own population."

the land, is its position at the entrance of the St. Lawrence, in the direct and only channel of an immense traffic, which, within a very short period, is certain to become vastly increased, not only by the throwing open to the Americans, of the navigation of the St. Lawrence, under the reciprocity treaty, recently concluded, but also by the extension of the trade of the province to all parts of the world. Whether viewed with regard to this future trade, or to the existing maritime trade of the province, which is confined to England, the United States, the Lower Provinces and the West Indies; to the establishment of an *entrepôt* in the direct channel of that trade, and of a coaling station for the three lines of steamships about to run between England and Quebec; or viewed as affording the most favorable points for establishing fishing stations, and of settlements and villages for supplying the fishermen belonging to the island, as well as those who will be attracted to its coast fisheries from a distance, and who will be desirous to rent certain portions of the shore for the purpose of drying their fish there; the position of Anticosti is a most admirable one, and if the island were composed of nothing but rock, without soil sufficient to produce a blade of grass, its position alone would render it capable of being made of more value than the most favored island in point of soil and climate, not possessing the advantages of that position. In regard, either to an entrepôt, or a depôt for coals, Ellis Bay offers a most convenient site for every vessel, whether taking the north or the south channel at the entrance of the river; and having a depth of 21 feet at low water in its most sheltered part, (secure in all winds), and having no bar, the fine steamers employed in running between England and Quebec, which only draw from 13 to 17 feet water, could enter and lay there at all times. Depôts for coals might

also be established at the South West Point, where there is a depth of 4 and 5 fathoms of water close to the shore; and at Bear Bay on the north-east side of the island, which is an excellent roadstead, with good anchorage. The latter points are nearly five hundred miles nearer to England than Quebec is; which is about the distance steamers have to make when getting short of coals upon the voyage from Europe; and several instances have already occurred of their having to run a considerable distance out of their way to procure coals at a cost of two or three days' delay, when, could they have obtained them at Anticosti, they need not have lost more than a few hours. For these depôts, coals could be easily brought from Pictou and Cape Breton, or be purchased from ships carrying them from England as part of their cargoes to Quebec. Thus the furnishing coal for the steamers touching at Anticosti, would, of itself, create a considerable traffic with the island. These steamers could also take some of the produce of the fisheries, &c., obtained there.

By establishing an entrepôt on the island, for the purpose of carrying on some of the traffic between Canada and Europe in the early spring, when for several weeks and intercourse between it and Quebec could be frequently kept up in small vessels, before ships from sea can traverse the same space, and later in the autumn after every ship from the latter has left for Europe, six weeks or two months would be virtually added to the period of open navigation at Quebec. While such an intercourse by colonial schooners or small steamers, (for which there is shelter almost every where), could be maintained at those seasons, ships from sea could arrive earlier, at and depart later from Anticosti, than they can arrive at or depart from Quebec, and those ships that might choose to dis-

charge and obtain their cargoes at other periods at Anticosti, could easily make three voyages instead of two. By doing so, they would avoid the worst part of the present voyage, (from Cape Rosier to Quebec); would secure six weeks or two months more of open navigation, and, in the three voyages, would save two thousand five hunfred miles. Vessels also, which, coming out late in the autumn, are sometimes obliged, after reaching the gulf, to run back to ports in the Lower Provinces, and winter there, having to continue their voyage on to Quebec in the spring, would avoid the loss of about six months, by being able to unload and obtain a cargo at Anticosti. Although the Baltic can be navigated by the largest ships, yet the trade of that sea is generally carried on by small vessels, in consequence of the dangers which exist there to the former; and, so in the gulf and river St. Lawrence, there are an immense number of small craft employed in all parts, and at the earliest and latest periods, among which we seldom hear of a wreck occuring, while, year after year, numerous Quebec traders, (of from 500 to 2,000 tons burden), are cast ashore in the river this side of Anticosti, before reaching it, or after having passed it in safety, and an immense amount of property is destroyed. The comparative immunity from disaster of the former, is to be attributed to the intimate knowledge of the navigation of the gulf and river, possessed by masters of colonial vessels, constantly employed in the same waters, in addition to their vessels being adapted for taking shelter in the numerous rivers and creeks, which exist along the coasts both of the river and gulf, where, for long distances, large vessels can obtain no safe anchorage. Only last summer a Liverpool vessel for Quebec was driven from her anchors at Bic, which is considered to be about the best anchorage in the river,

and was stranded upon Rimouski. It cannot, therefore, but be allowed, that it might be advantageous to employ, to some extent, small colonial craft within the river for such commodities as they could conveniently carry. Among the exports from the Province, they could easily take deals and boards, staves, pot and pearl ashes, flour and grain of all descriptions, pork, fish and furs, &c., and, with the exception of machinery and railroad iron, all articles of import landed at Anticosti, could be as easily brought by them to Quebec. This would partly upset the present system, and perhaps be unpopular with the merchants of Quebec; but many ship-owners and ship-masters, with several of whom the writer has conversed upon the subject, would be highly in favor of it, and would never send a ship to Quebec whenever she could obtain a cargo at Anticosti. And if underwriters and shippers, here and in England, could be shown that goods conveyed in this manner would not be liable to one-tenth the risks to which they are now exposed; that not one-tenth of the present number of wrecks would occur, and that, at a moderate cost, harbours fit for the largest trade could be made at Ellis Bay and the South West Point, they also would gladly lend their aid to carry out such an arrangement. As for the proprietors of the island, they, no doubt, would most readily give their assistance to that which would make their property worth in the market twenty times its present value there. Thus by combining the interests and the means of many, (who, as yet, have no knowledge that their interests may be made identical), towards establishing such a system of commercial intercourse as that which has been pointed out, the undertaking might be accomplished, notwithstanding any difficulties which other parties might oppose to it. It would not depend upon whether the latter would

favor it or not, but whether those, having an interest in carrying it out, could, by organization, by economy of management, and by steadiness of purpose, place and maintain a sufficient quantity of well-selected articles upon the island, and be able to dispose of them at about the same rate as that at which they would be sold in the markets to which they might properly belong. For the intercolonial trade of the St. Lawrence, the island might be made a convenient centre, from whence the whole of it could be easily carried on.

Besides the main trade of the province, conducted from Quebec, the trade of the flourishing settlements up the Saguenay towards Lake St. John, which are rapidly extending, may be made to contribute to the importance of Anticosti; the whole of those settlements being then supplied by the latter, as well as many of the extensive and populous settlements along the main shores of the lower St. Lawrence. At a future period a further trade by the Saguenay may be looked for, coming across from the St. Maurice, from the Upper Ottawa and from Lake Huron, through a magnificient country, which will rapidly become occupied, whose commerce will seek the nearest outlet to Europe; and, whenever a railroad shall be constructed, to connect the Saguenay with Lake Huron, much of the trade of the "Far West" will come the same route. Ultimately such a road will become a branch of the great railway, which is at no distant period to cross this continent to the Pacific. Instead of assisting to divert the trade of Canada to channels ,passing through the United States, by which we lose the value of one-half the traffic before it reaches the ocean, and our ships lose the whole of the freight to Europe, it would be much more beneficial to the province, if our leading mer-

chants would encourage the use of routes passing through our own territory to the Atlantic.

Anticosti may also grow into importance as an emporium for a portion of that commerce, which Canada is now in a position to open out with all parts of the world; for, to large vessels coming long voyages from the East Indies, China, &c., it would be of some consequence to avoid the delay, and the dangers, of coming up the St. Lawrence. The island may then almost become such a mart as the ancient Taprobana, (the Ceylon of the present day), was in regard to the trade between China, India, the Persian Gulf, Arabia and Africa, when "she received and dismissed the fleets of the East and of the West"; her position alone enabling her to extract more wealth from that trade, than was derived from it by the countries to which it properly belonged.

Since the foregoing was written, the writer has visited the island which he has endeavoured to represent as it appeared to him, after an examination and a comparison of every authority bearing upon it, and an inquiry into its present condition, of nearly every person now residing, or who has lately resided there. He will now, therefore, add the result of his own observations, made upon the spot.

Having taken passage at Quebec about the middle of July in the steamer "Wilmington," which was sent to Anticosti with the object of assisting a ship, wrecked last November about twelve miles from Ellis Bay, (which had remained there ever since, almost uninjured by the ice or storms of an unusually severe winter), he visited that bay as well as the South West Point three times, and was upon the south side of the island for about three weeks. He also twice visited Gaspé Basin. At Ellis Bay the steamer ran in for shelter upon each occasion, and upon the last remained there for three days.

She anchored about two miles up the harbour in 3½ fathoms at low water, about a mile distant from the shore upon either side, and a mile and a half from the head of the bay, which appeared to be, from point to point, (Cape Henry to Cape Eagle), from eight to nine miles round. Upon looking out from this position towards the sea, every appearance of the most complete security was presented, the limestone reefs from the two points stretching out south-east and south-west towards each other, the one a mile, the other three quarters of a mile in length, and forming complete breakwaters, quite uncovered at low water, and which, being covered to only a very slight depth at any time, stop the force of the sea even at high water, as was indicated by the surf which they then caused, as the waves broke upon them, and which clearly directs ships to the channel between them, of six hundred fathoms wide. This channel, too, is much protected by the water shoaling immediately outside to six fathoms, which, although deep enough to admit the largest vessels, tends to break the force of the sea. This was experienced upon one occasion, when, in a heavy southerly gale, the steamer ran in from a tremendous sea outside, in which she pitched nearly bowsprit under, and anchored in water almost as smooth as a mill pond. To all on board the almost sudden cessation of violent motion, appeared as extraordinary as it proved agreeable. The same afternoon a large American schooner ran into the bay for shelter, and anchored nearly a mile outside the Wilmington in perfect safety, where she remained till the gale abated the following morning. During the several periods the steamer lay in this harbour, heavy winds were experienced from every quarter, yet she rode through all as calmly as if she had been moored in front of Quebec, and in the spot where she

was anchored, nothing less than such a hurricane as would cast vessels adrift and sink them, either in the harbour of Quebec, or in the Liverpool docks, could affect a vessel there. Mr. Gamache, who has resided for twenty five years at the provision post at this bay, informed the writer that the harbour was perfectly secure in all winds, and at all periods, that, besides other vessels, the "Sir Richard Jackson," of about 600 tons burthen, had twice lain there for several months each time, and that her Captain had said it was as safe a harbour as any he had ever entered. Mr. Gamache has, himself, built two vessels there of a considerable size. A gentleman on board the Wilmington, a member of Lloyds, who had come out from England, and had chartered the steamer to proceed to the wreck at the island, and who had been three times round the world as Captain of an East India Company's ship, declared that he considered the harbour "a most excellent one;" so much so, that he should on his return to England make it specially known at Lloyds. But, as some persons, who have never been in Ellis Bay, or have not been there when there was heavy seas outside, imagine that it must be exposed to southerly winds, the following extract is given from the log of the Wilmington, which should convince them of their conclusion in this respect being an erroneous one: "Monday, 2nd August, 1854,—It looking very wild and bleak to south-west, with heavy rain and quick flashing lightning and thunder, proceeded direct to Ellis Bay. It then blowing strong from south-south-east with rain and sea rolling in with a thick fog, kept the lead going, and went along the coast in sight of breakers, seeing them when we could not see the land, Made out Cape Eagle by 9 A. M., rounded its armed, (protecting), reef, sounded

up the bay, and came to with both anchors by 9.40 A. M.—3 P. M., wind south, blowing strong and about right up the bay. We ride smoothly and safe. Coming in between the reefs there is a swell, which might make a stranger fear the safety of his ship, but as you run up the bay, it becomes less, and at anchorage smooth riding and good holding ground." This, and the fact of a sailing vessel having run in for shelter the same afternoon, when the wind had increased in violence, not only show the safety of the harbour during the worst winds, (and as the steamer made for it upon this occasion, Captain Rudolph and his officers exclaimed that its security would be well tested in such weather), but they also prove how easy it is of access under the worst circumstances: a strong southerly wind blowing directly in, a heavy sea outside, and a thick fog. Though, the latter apparently continued out at sea, when once in the bay, there was only a slight haze perceived. The thickest fog, however, encountered during the cruise, was in coming up the river, from Metis to Green Island. At Anticosti, although there were occasional fogs, it was often clear enough to see across to the south shore, a distance of forty miles. Much might be added here, in favor of Ellis Bay, as a harbour, but the fact of such vessels as the "Sir Richard Jackson" having been repeatedly there in all weathers, without any of them having been cast ashore, or having dragged their anchors, should be sufficient. No instance has ever occurred of a craft of any description having dragged her anchors, or been injured there in any way; and Captain Rudolph stated that the Wilmington would have ridden just as safely with a single anchor as with two. As the underwriter on board, belonging to Lloyds, remarked, there are many places in England, and other countries, carrying on a large

maritime commerce, which have not so spacious, so deep, or so safe a harbour as Ellis Bay.

The appearance of the shores of this bay has been already pretty accurately described. They are generally thickly wooded with spruce trees, of a better growth than those near the sea upon other parts of the island, and on the higher ground in the distance, a good many hard wood trees were seen of a still larger size. A conspicuous and picturesque clump of birch trees stood out from the spruce close to the shore, one of which, the writer measured at five feet from the ground, where he found it to be five feet in circumference, its height appearing to the eye to be almost sixty feet. The five substantial buildings of the resident are very prettily placed near one of the three or four fine trout streams, which flow into the bay, where he has several acres cleared and divided by excellent fences, and where he had growing, and looking remarkably healthy, every description of vegetables, and some fine timothy grass. The potatoes there were looking more advanced than they were at Quebec, when the steamer left the latter place a few days previously. The soil, though not very deep, appeared to be very good, consisting of a dark loam, with sand and gravel below; and there is little doubt that it could easily be made to produce some of the hardier grains; to ripen which, or even wheat, there must be quite sufficient heat, the thermometer upon one or two occasions during the Wilmington's stay there being as high as 81° in the shade, and 105° in the sun, and at no time going lower than between 50° and 60° during the three weeks the steamer continued in the neighbourhood of the island. Round the bay many beautiful wild flowers were seen; also the sarsaparilla plant and the sweet pea; and on the beach, the writer picked up a piece of sponge, which had been

detached from the bottom by the action of the sea. The salmon-trout in the river, near the resident's house, were so numerous that they might almost have been caught by the hand as they moved in shoals from one part to another, upon being disturbed by the sailors who attempted to take them with buckets. Quantities were obtained and found to be delicious eating. A number of very fine salmon were also purchased of the resident, whose assistant happened to enter the bay with fifty he had just caught in the *Becscie* River, in the course of about an hour; and several large lobsters were taken in the bay, and sent on board. But what appeared of extraordinary interest to those in the steamer, was the sight every day, when the tide was out, of some three or four hundred seals sleeping or playing round the bay, generally entirely out of, but near the water, and some of them occasionally swimming close to the vessel, whose round heads looked very much like those of a human being. One of them, the resident mentioned, he had killed ,a short time previously, upon the step of his door. The bay must therefore be a favorite resort of theirs. A great many whales, at least fifty, were also seen between the island and Gaspé, and several between the former and Bic, each of which must have been worth from £200 to £400; yet only one vessel was met with, or heard of ,in pursuit of them: a large schooner from Gaspé. Both the whale and seal fisheries could be carried on much more conveniently from Ellis Bay than from the former or from any other place within the gulf. With this sheltered spot everybody on board the steamer was much pleased: from the excellency of its harbour, the inviting appearance of the country around it, and the objects of interest which were met there; and even the sailors expressed a desire to take up their

abode upon its shores. One sailor, who had belonged to a vessel wrecked upon the island last November, and who had wintered there, became so charmed with the place, that he had already become a permanent resident, employing himself in fishing and hunting; and the captain and the whole crew of a ship, that went ashore in a fog about eight miles from Ellis Bay, when the steamer was in the harbour, informed the writer that if they could obtain land there, they would send to Hull, whence they had sailed, for their families, and settle on the island in a body.

At the South West Point, where the steamer could have run close up to the shore, and been moored to the flat limestone rocks, which form complete natural wharves, the five or six buildings, including a very large stage and store-house for fish, were so disposed near the magnificent lighthouse, which towers above all, as to present quite the appearance of a village. Upon landing, this appearance was rather heightened than diminished, as a number of fine fields, neatly divided by straight fences, in which were growing very luxuriantly many vegetables and grasses, came in view, and a horse and four fine cows, all in excellent condition, were seen feeding upon a common close by. Added to these indications of civilized life, were a number of fowls in all directions among the houses, and several fat pigs venturing further back, to rob the bears of the rich berries and wild fruits which abounded there. Near to the landing place two persons were employed in cutting up a huge shark, which had just been caught, having, no doubt, been enticed out of his usual latitude by the shoals of fish which proceed from the Atlantic towards the island. The same day immense quantities of mackerel were seen close under the point upon which the light-house stands.

By their praiseworthy exertions, Mr. Pope and his son have shown what may be accomplished by well-directed industry in places, apparently, the most unpromising; for this spot must be about the bleakest upon the whole island, being completely exposed to the north-west winds. Last year they grew most excellent oats, and next year they purpose to grow both oats and barley, seed for the latter of which the writer has just sent to them. Some of their potatoes of last year, of the few they had remaining, which the writer brought to Quebec, weighed three to the pound,, and some of this year's growth, taken out of the ground on the 5th September, and sent to the writer, are of a still larger size, and of an equally fine description. If there were a few more industrious and intelligent settlers upon the island, like Mr. Pope and his family, who are the most deserving people that could be met with, it would soon obtain a very different character, in regard both to climate and soil, than has hitherto been accorded to it. The first frost which appeared this year at the South West Point, Mr. Pope, in a letter to the writer, says, took place on the 27th August, but was not sufficient to do the slightest injury to his potatoes: at Quebec the tops of the potatoes were blackened by frost about the same time. The soil at the South West Point has been already described; but the writer penetrated about two miles into the woods there, where he found the soil very similar to that in many parts of Canada in the original forest, deep with vegetable deposits, without stones or a particle of rock to be perceived. At Gaspé, with a less genial soil and climate, the writer saw several fields of excellent wheat. The trees, which, near the sea at the point, were about a foot high and spread out their tops like mushrooms, improved gradually, but rapidly, as he entered the woods, and at a dis-

tance of a mile back, were sixty or seventy feet high. This alone would indicate the existence of large and valuable timber in the interior; but he was informed by all whom he saw on the island, that quantities of such timber were to be met with in many parts. A number of pieces of particularly fine grained tamarack he saw piled up with some other wood near the light-house; and the fire-wood, which the steamer procured, both at the South West Point and at Ellis Bay, proved to be much better than that obtained at Gaspé, or at any part of the south shore of the St. Lawrence where the steamer took in fuel. After being three times in the bay at the South West Point, and examining the greater portion of it, and after having being caught in a north-west gale there, which obliged the steamer to run out to sea, the Captain of the Wilmington, who has a good knowledge of the construction of harbours of refuge, and who proved himself to be a thorough seaman upon several trying occasions, declared that, at an expense of £2,000, he could build a break water upon the reefs running out from the point, which would render the bay a secure shelter in all winds for the largest vessels. A harbour could also, probably, be made at Salt Lake Bay, about eight miles further to the east. As at Ellis Bay, many wild flowers and fruits, and the sarsaparilla plant were met with at the South West Point; also a plant, ressembling the cotton plant, and the reindeer moss. The cranberries which are very numerous in certain parts of the island, might be made profitable exports, as they are at the Magdalen Islands, and Prince Edward's Island, whence many barrels are sent to the United States, where they are eagerly purchased. At the present time cranberries are selling in Montreal for 12s. a bushel. Mr. Pope mentioned that Admiral Coffin touched at the South West Point

in the early part of the summer, and after making many inquiries about the island said that it could be made to produce anything which can be grown in Canada. The finest clay soil, however, appears to be found upon the banks of Observation River, (the scenery at the entrance of which was very beautiful, as viewed from the steamer as she passed), and also on the north side of the island, where there are many spots among the hills, sheltered entirely from easterly and north-west winds; those parts having been pointed out to the writer by persons aquainted with them, as containing the richest soil of that description on the island, so far as it is yet known. But it is very evident that not one-tenth of the island has ever been explored, or even traversed, the hunters and fishermen, and others who have ever been upon it, having confined their excursions to the sea shore and the principal rivers, hardly ever venturing any distance back from the latter. Like all countries, Anticosti must contain much bad land as well as good, and the former might be supposed to prevail along the shore, where, in some parts, there are quaking bogs, like those of Ireland, (which, however, may be drained and be turned into the richest soil), and a good deal of rock; but, whether the good or the bad land predominate to any extent throughout the island. there can be no means of ascertaining, without a through survey of the interior. That much good land, besides those fertile spots which have been pointed out, by the various parties referred to in this communication, is likely to be discovered by such a survey, the writer is now enabled to show upon one of the highest authorities existing upon this continent; namely, that of Professor J. Hall, Palæontologist of the New York State geological survey, and author of the "Palæontology of New York," who, having examined a number of fossils brought from Anticosti by

the writer, among which he discovered a new species, described them in writing, and added the following lines as to the conclusions which may be drawn in regard to the island from their presence there: "The specimens indicate the occurence of limestone beds with alternations of shale, and the decomposition of these will furnish a productive soil in consequence of the abundance of calcareous matter." These specimens, and some others, which they had not time to properly examine at the moment, both Professor Hall, and our own talented and indefatigable geologist, Mr. Logan, considered so interesting, that they expressed themselves strorgly to the writer upon the importance of the Government undertaking a thorough geological survey of the island, with the object of making discoveries there which would give it an economic value. A specimen of the marble brought from the island, obtained the first prize at the recent Provincial exhibition held at Quebec.

As Anticosti belongs to a number of persons, some of them residing in Canada and others in England, who are not likely to combine in any comprehensive plan for developing its resources, but who would no doubt be prepared to dispose of their interest in it at a reasonable price, it is to be desired that, either the Government, or some public company in Canada, or England, or one belonging to both countries, should purchase the island, and expend sufficient means, which the present proprietors could not afford, in turning its resources to account. Of the two, a company, which could enter into the several undertakings glanced at in this communication, would be the more suitable for the purpose; but the field may be made to embrace so many, and such varied objects that it could well give employment to several distinct companies. There might then be a colonization com-

pany, a fishing company, and a commercial company; the first purchasing the whole island, and selling, or leasing to the others, those portions of the coast at which the operations of the latter could be most conveniently carried on. A thorough survey, however, of the whole island might be well undertaken by the Government in the mean time; for, although it belongs to private individuals, it is of the highest public importance, for many reasons, which must suggest themselves in the course of this communication, that the island be not allowed to continue in its present state of desolation; besides which, every large addition made to the inhabited seaboard of the St. Lawrence, must materially increase the commerce, the shipping, and the wealth of the province.

ARTICLE 16.—*Water Power of Quebec.* BY E. D. ASHE, *Lieut. Royal Navy, F.R.A.S., Director of the Observatory, and Vice President of the Literary and Historical Society, Quebec.*

[Read before the Society, Nov., 1854.]

I PROPOSE this evening bringing before your notice the Water Power of Quebec, in order that advantage may be taken of the great motive force that we have at our command.

Raising water for domestic purposes was one of the first things that occupied the inventive genius of man, and the fertilizing effects of a river overflowing its banks, no doubt soon taught him to irrigate the land, in a country where little or no rain fell during many months of the year; and it is remarkable that the most primitive mode, as well as the more advanced mechanical contrivance, is still in use on the banks of the Nile, in preparing the land for the seed.

The most simple contrivance consists of a shallow basket suspended from the centre of a rope, the extremities of which are held by two men: when water is required to be raised, the basket is dipped into the river, and the water thrown over a bank.

The water wheel worked by oxen, and generally known as the Persian wheel, consists of a number of earthen pots attached to a band that passes over the circumference of a large wheel, and sufficiently long to allow the vessels to reach the water, which they do mouth downwards; but in order to allow the air to escape there is a small hole in the bottom of each; now when the vessel leaves the water, it runs out through this hole in the bottom, but they are so arranged that the water falls into the vessel that follows it, so that after the first round each vessel receives as much water as it loses, consequently they all arrive full at the top, where they are emptied into a trough.

In hot climates, where a portion of each day was spent in the bath, man could not have been long in finding out that falling water produced the same force that would be required to raise an equal quantity of water to the same height from which it fell, and no doubt it was the first motive power in use for the various kinds of mills, and may lay an equal claim with the wind to having been the first contributor towards the civilization of man.

All that could have been done either in the way of raising water from its bed for ornamental purposes, or using it as a motive power, was done by the ancients.

Somebody has said that aqueducts are stupendous monuments of ancient ignorance, for had they known that water would rise to its own level, instead of spanning valleys with costly arches, they would have simply laid a pipe down one side of the hill and up the other—but I beg leave to say, that the only ignorance displayed (in my opinion) is by the person who made the remark; for the only pipes that the ancients could command for such a purpose were made of clay, and it was not until

the more modern improvements in casting iron had taken place, that we were enabled to obtain a pipe of sufficient strength to bear the pressure of a column of water equal to the depth of the valley.

I think the foregoing remarks will prove that I have no intention of robbing old Cheops of what may probably belong to him, or of laying any claim to originality, I simply wish to shew, that an immense power is quietly waiting at our doors to be made use of.

Bringing water from Lorette merely to turn machinery, never would have paid, but since it has been brought into the Town for domestic purposes, a portion of it may very profitably be spared for mechanical purposes; in order to do this effectually, a reservoir must necessarily be constructed at the greatest available height near Town.

The Citadel is the place most elevated and best adapted for the purpose in the vicinity, and I have no doubt but that the Engineers would for such a purpose allow their large dry ditches to be turned into wet,—however, the land about No. 2 Tower is 330 feet above the level of St. Peter Street, and is sufficiently high for our purposes, where a reservoir of any dimensions might be built.

The endless variety of ways in which this power may be made use of, makes it difficult to choose one mode in preference to another. Perhaps the simplest and most efficacious way would be in working a piston in a cylinder similar to the steam engine, as I shall now point out.

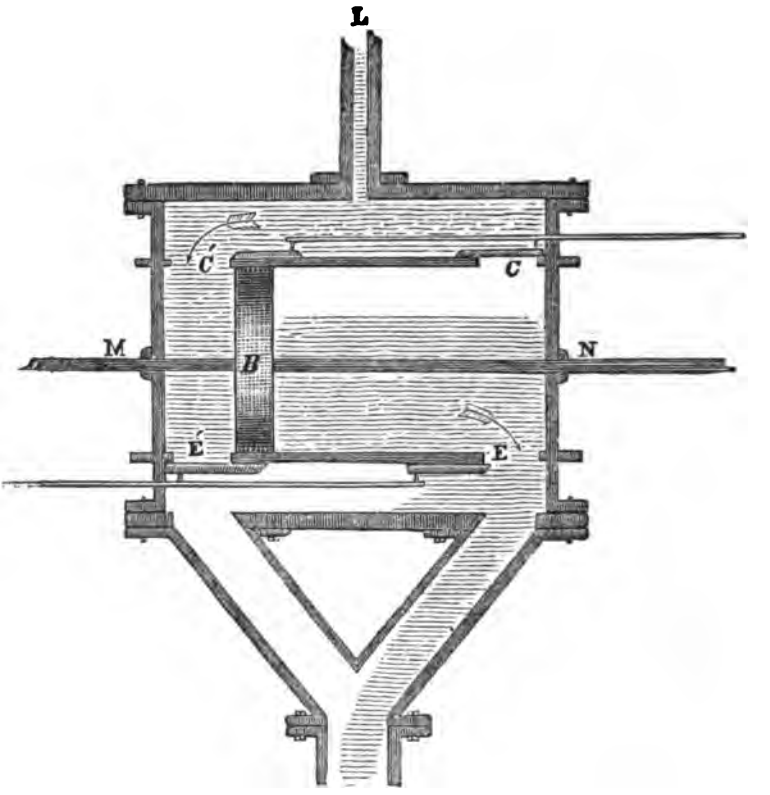

DIAGRAM No. 1.

Let the figure represent a cylinder placed horizontally, with a piston B, six inches in diameter, moving freely, but water tight.

The slides C' C and E' E are worked as in a steam engine, and need not be described here, it will only be requisite to say, that instead of steam, water is used.

The water enters at C' and flows out at E, as those ports are now open; whilst the piston B moves towards

N, those ports shut and the opposite ports are opened, when the waters enters at C, and runs out at E'; and thus a reciprocating motion is produced.

To calculate the power of this little engine, we have the weight of a column of water 300 feet, and one inch in diameter, equal to 102.2 lbs. which must be multiplied into the area of piston, which gives 25 cwt. 3 qrs. for the working force.

The number of strokes such an engine would make in a minute, will equal the number of times that the feed pipe L can fill the cylinder M N in a minute.

Using the formula $2h\sqrt{\frac{ag}{2}}$ for the quantity discharged in a second, where h = area of orifice, a = altitude of water, $\frac{1}{2}g = 16\frac{1}{12}$ feet, also taking $\frac{3}{4}$ of results for the practical application of the rule, and dividing by contents of the cylinder, it gives three revolutions in two seconds.

Here then we have an engine that may be put into a very small compass, and placed in the corner of a shop, without fear of fire or explosion, and of so simple a nature, that any one who could manage the cock of a beer barrel would be perfectly competent to take charge of it; the sole motive power being the flow of water through the water pipe L.

As there would be a metre attached to each, the mechanic would only pay for the water that passed through the engine.

I have now to call your attention to a Water Power on a much grander scale, and which, if taken advantage of, will, no doubt, make valuable returns to many of our citizens; not that I have any mercenary views; on the contrary, I shall be happy to give working drawings for any sort of engine that may be required either for saw mills, flour mills, discharging ships, &c., &c.

Fifteen feet may be taken as the mean rise and fall of

the tide at Quebec, consequently the float of a tide guage moves through 60 feet in a lunar day, or about 26 inches an hour.

Many and various are the ways in which this unlimited power may be made subservient to the interests of our merchants; but time will only allow me to give the outline of a simple engine that may be worked by it (*Vide* engraved Diagram, No. 2.)

Let a platform 40 feet by 30 feet, or any size that may be convenient, and 3 feet in thickness, be made of fir, and kept in its place by guide rods, under any of the wharves. This platform would rise and fall with the flow and ebb tides, moving at the mean rate of 26 inches in an hour. To the surface of this platform is fixed a rack B, which also moves at the rate of 26 inches an hour; this rack turns the pinion of a small wheel C, 26 inches a circumference, and on the same axle is a wheel D, 26 feet in circumference, which turns round once in an hour, this wheel drives a similar pinion and wheel round 12 times in an hour, which drives a third pinion and wheel round 144 times in the hour; to the last wheel is attached a drum and belt.

Suppose a platform 40 feet by 30, and 3 feet in thickness, made of fir, whose specific gravity is half that of water, and consequently would be immersed 18 inches; then its maximum pressure, in pushing drawing-rod B, would equal 50.2 tons, and with the combination of the wheels and axles D. E H and C F G, (the diameter of the wheels being 12 times greater than the diameter of the axles) the strap on the circumference of driving wheel H will have a force of traction equal to 82.22 lbs., and a velocity of 1.04 feet a second, which are only limited by ratio of wheel and pinion.

Thus it will be seen that, with such a power at our

command, we can drive any sort of machinery at an expense a little more than first cost; it can work day and night with the exception of about 2 hours in the 24, and as long as the St. Lawrence flows, and the moon remains in her orbit, they will both contribute to the happiness and prosperity of a country whose destiny it is to become one of the mightiest of the earth.

E. D. ASHE,
Lieut. R. N., F. R. A. S.

Observatory, 8th Sept., 1854.

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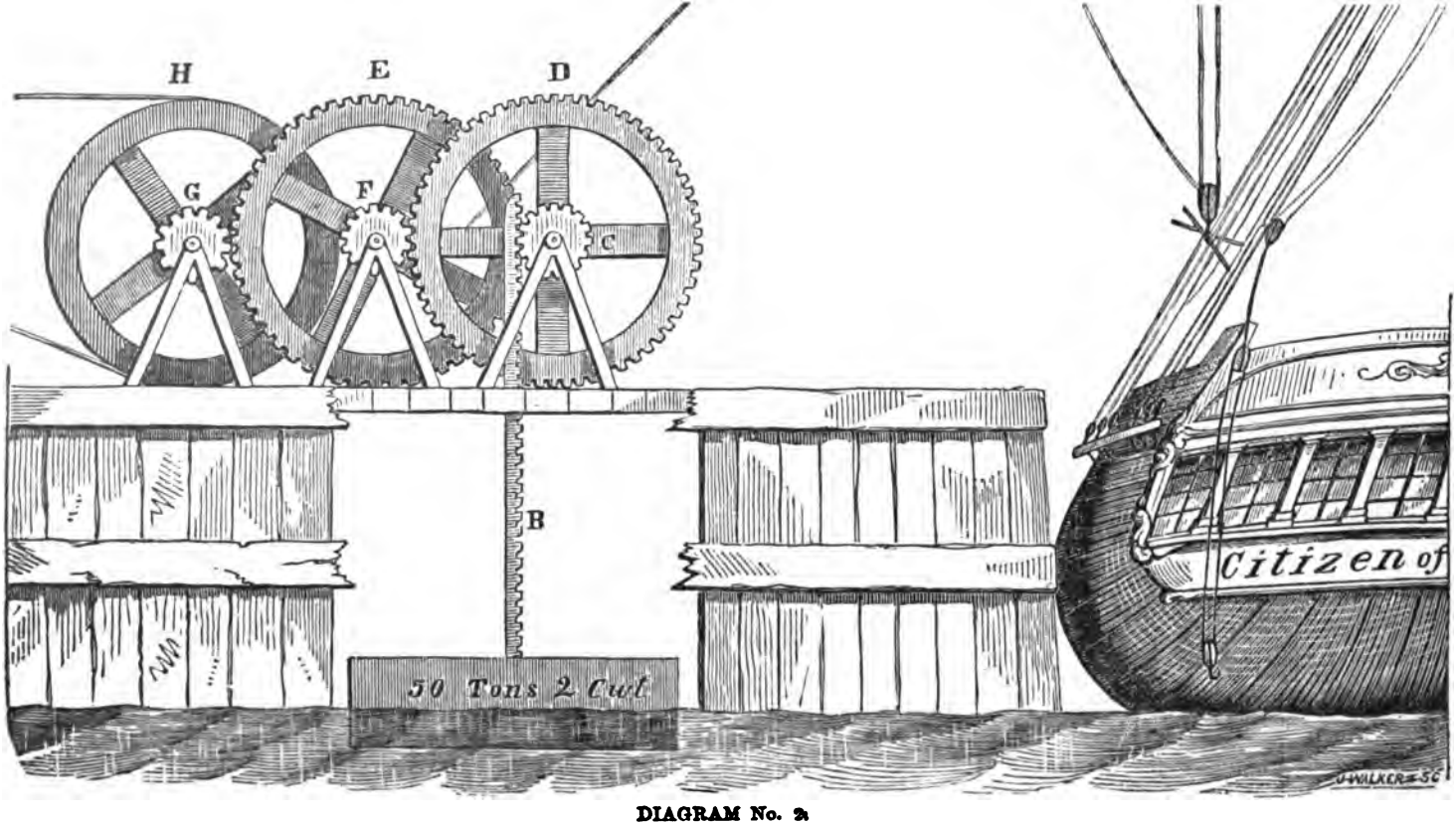

DIAGRAM No. 2.

ARTICLE 17.—*Plan of the construction of a Raft to rescue passengers from sinking Ships.* BY E. D. ASHE, *Lieut. R. N., F. R. A. S., &c., &c.*

[Read before the Society, Nov., 1854.]

"Then rose from sea to sky the wild farewell,
Then shrieked the timid, and stood still the brave,
Then some leaped overboard with dreadful yell,
As eager to anticipate their grave;
And the sea yawned around her like a hell,
And down she sucked with her the whirling wave,
Like one who grapples with his enemy,
And strives to strangle him before he dies."

BYRON.

I AM desirous of obtaining the valuable co-operation of the Society in a cause which I conceive to possess claims of the very highest order upon our common feelings of humanity, and I hesitate not to express my conviction that the Society could not direct its talent into a more benevolent or more useful channel than that of devising means whereby helpless women and children, deserted, possibly in their hour of need, by those on whose practised skill and courage they had naturally depended, may be rescued from the perils of a sinking ship.

Such a scene of horror, as that described by the survivors of the "Arctic," is, alas! too common. It needs not the stormy wind and tempest to do the work of death among

those that "go down to the sea in ships, and occupy their business in great waters." There may not possibly be "a breath of air to break the wave." In many instances the surface of the Ocean may be unruffled, save by the expanding circles, forming in quick succession around the hapless crews

> "Of ships that have gone down at sea
> When heaven was all tranquillity!"

Oh! could we hear the shrieks of the mother, calling on others, helpless as herself, to save her darling child; or could we behold the sinner, with a look of sullen anguish and despair, about to close for ever a life of frivolity and of licentiousness, and to appear before the God who made him; could we listen to those sounds, and could we behold those scenes, surely we should feel ourselves constrained to use our utmost efforts to prevent or at least to render of less common occurence, catastrophes of such a fearful nature—catastrophes that have been of late so frequently and so sadly brought before our notice.

I feel confident, therefore, that, actuated by principles, and influenced by sentiments, similar to my own, I shall have the sympathy and encouragement of this meeting, in bringing forward a simple and expeditious mode of constructing a raft applicable alike to ships of every class, whether screw, paddle, or sailing vessel.

I therefore have invented a "raft," which I shall call the "Bolsa* Raft," of such a construction that, should the crew run off with the boats, as recently has occurred, the passengers will have no difficulty in putting the raft

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* I have called it the "Bolsa" raft, because it is constructed upon the same principles as the raft so called, commonly used on the coast of Peru, and other parts of the South American Continent.

together, a work which they can readily accomplish in a few minutes.

It consists of a number of wooden tubes 10 feet long, and 1½ feet in diameter, covered with painted canvass, and each having a ring or grummet at either end; these grummets are made to pass readily over two spars, and are secured by the main pieces of the raft.

These tubes are so arranged that they form seats around the deck, which will insure their always being at hand,, and in which form they will not take up more deck room than is generally occupied for such a purpose.

The leading feature of the invention is, that nothing can be put in the wrong place.

Before explaining the drawings, I will offer a few suggestions:

That there should be a few plain directions printed, and hung up in all ships, explaining "where the passengers are to assemble, and what they are to do in time of danger"—and, by shewing that there is ample room for all, they would tend to prevent a rush being made for the first boat that is lowered, and which by being overloaded is generally the first to consign some twenty to a watery grave.

A number of water proof bags, some filled with biscuit, and others with flour mixed with sugar (which, when diluted with a little water, affords great nourishment,) should be ready to hand up on deck at a moment's warning.

Food, however, is not of the first importance, for a few biscuits will sustain life for many days, and may be carried in the pocket: but anxiety, and exposure to a hot sun, bring on intense thirst, which, if not alleviated, soon produces delirium, and the poor sufferer, after protracted misery, and drinking salt water, and even his [illegible] dies by a death of all kinds the most horrible.

Although Food is very portable, a small portion will appease the cravings of nature; on the other hand, fresh Water is heavy, takes up much room, and is required in considerable quantity. To overcome this difficulty, every fifth tube is filled with fresh water, and, in order that it may be immediately distinguished, painted *white*. Of these white tubes, a certain number is distributed in different parts of the ship, so that in the construction of each raft there will be a good supply; and, as fresh water is lighter than salt, these tubes, instead of adding to the weight of the raft, will assist in giving it buoyancy.

In addition to food and water, there should be put into the bags of flour;—in one, flint and steel, in another a small telescope, in a third two or three goblets, and various other articles that were most required by Robinson Crusoe. Also, attached to some part of the raft should be a gong, that, when sounded, could be heard by passing ships at an immense distance. Passengers should be directed to come on deck with their blankets, as either in hot or cold climates woollen clothing is of the utmost importance.

The advantages of the "Bolsa Raft" are these, viz: that it can float on the lightest spray, cannot be capsized or swamped, will hold a large number without crowding, and can land the crew in safety through the greatest surf, which is no small advantage, as it may frequently happen, that, after a boat has lived in the roughest sea, she is capsized in the heavy breakers on the shore, and the unfortunate crew perish in sight of their homes.

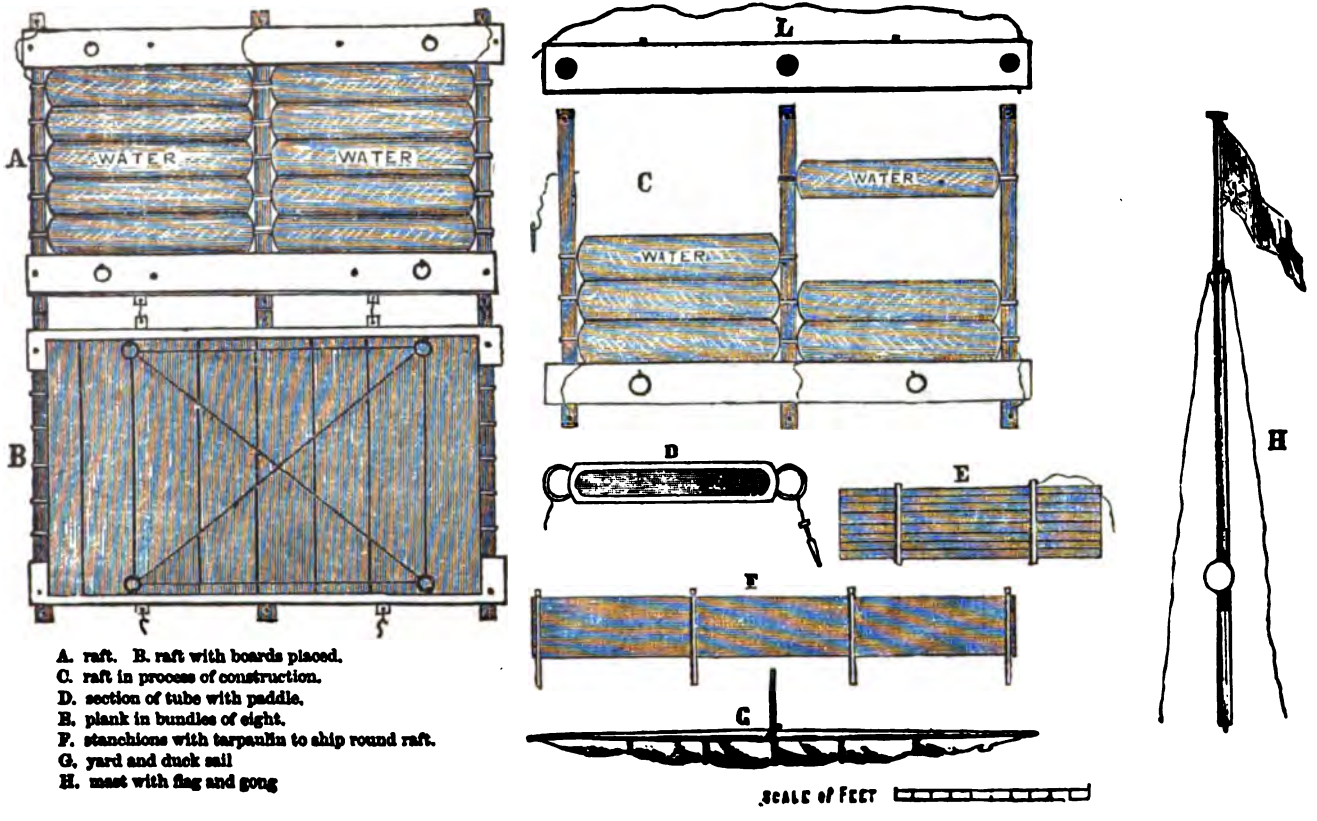
I will not enter into further detail, but will venture to remark, that as persons are appointed by Government to see that emigrant ships have proper stores on board, and that they are not too crowded, so also should the public be protected by having proper persons appointed to see

that all passenger ships are provided with sufficient means of escape in time of danger.

In conclusion, you will permit me to say that no love of gain has induced me to bring forward the plan which has now been submitted for your consideration, nor has the idea of taking out a patent ever found a place within my thoughts. I am willing and anxious to fit any vessel with such a raft, and to frame rules and regulations for the conduct of passengers and crew, in case of fire, or wreck; nay, as far as my limited means will allow, I shall cheerfully and gladly contribute towards defraying the expenses of affording greater facilities of escape from sinking vessels.

E. D. ASHE,

Lieut. Royal Navy, F. R. A. S., Director of the Observatory, and Vice President of the Lit. and Historical Society, Quebec.



A. raft. B. raft with boards placed.
C. raft in process of construction.
D. section of tube with paddle.
E. plank in bundles of eight.
F. stanchions with tarpaulin to ship round raft.
G. yard and duck sail
H. mast with flag and gong

ARTICLE 18.—*Mean results of Meteorological Observations taken during the winter of* 1853-54. BY LIEUT. NOBLE, *R. A., F. R. A. S.*

[Read before the Society, the 18th October, 1854.]

The means of the accompanying observations are derived from observations taken at 6 A. M., 2 P. M., and 10 P. M.

BAROMETER.—The mean height of the Barometer, corrected and reduced to 32 F., was in October 29,638, December 29.662, January 20.776, February 29.797, March 29.618, and April 29.797

The highest recorded Barometric pressure was 30.496 ins. on the 25th February, and the lowest 28,781 ins. on the 18th March, giving a range during the period of observations, of 1.715 ins., and a mean monthly range of 1.321 ins.

It is, of course, impossible, in observations so partial, to deduce with much probability of accuracy, any general results, yet I cannot pass over without notice the usual great height of the Barometer before an easterly wind, and its rapid fall after that wind has commenced.

The following table shews the mean height of the Barometer for twenty-four hours before every easterly wind, and also its mean height for the next two days:

		24 hrs. previous.	1st day of E. Wind.	2nd day of E. W..
Dec.	5—	30.055	29.627	29.698
"	17—	29.641	.419	28.934
"	21—	30.077	.981	29.339
"	25—	29.395	.393	.384
Feb.	10—	30.018	30.090	.297
"	15—	.062	29.678	.767
"	19—	.021	.704	.208
"	22—	.000	.994	.863
"	25—	.389	.565	.548
"	7—	.181	.751	.209
"	12—	.253	.961	.941
"	20—	.050	.813	.492
"	25—	.451	.876	.854
March	1—	29.893	30.105	29.756
"	7—	.788	28.517	.703
"	13—	.803	.779	.591
"	22—	.801	.378	.093
"	30—	30.117	30.036	.344
April	7—	29.863	.021	.785
"	14—	30.199	29.958	.975
"	21—	29.732	.668	.735

It appears, therefore, from this table that while the mean height of the Barometer for the five winter months was 29.741 ins., the mean height during the 24 hours previous to the commencement of an easterly wind was 29.990 ins. during the first twenty-four hours after its commencement 29.775, and during the next twenty-four hours 29.358 ins.

The maximum height observed, 30.496 ins., occured the day before the commencement of an easterly wind.

The only case of any importance where the Barometer appears to have remained at a considerable height during the prevalence of an easterly wind is in the period from the

28th to the 30th April inclusive, and for these three days the mean height is 30.032 ins. During this considerable height there fell 2 ins. of rain.

Although I have not examined the results of the Montreal and Toronto Observations so closely as those taken at Quebec, yet the same general remarks appear to apply to both of these places.

TEMPERATURE.—The mean temperature of the air during the month of December was 17° 6, during January 7° 5, February 8° 1, March 24° 3, and April 34° 23.

The mean temperature of the three winter months was 11° 0, the coldest day was the 29th of January, when the mean temperature was as low as —16° 1, the minimum thermometer was also on the same day, and was —29°

The following are the mean maxima, mean minima, and mean daily ranges for.

December.		January.		February.		March.		April.	
22°.4		15°.1		17°		31°.9		41°.0	
10.1	12°.3	—2.7	17°.8.	—5.4	22°.4	14.4	17°.5	23.3	17°.7

The greatest daily range was on the 30th of January, and amounted to 46°.5, and the least was on the 14th April, 2°.8.

There were 2 days in November in which the thermometer sank below zero, 7 in December, 20 in January, 17 in February, and 4 in March, making a total of 50 days during the winter upon which the thermometer was registered below zero. There was 1 day in September in which the thermometer was below 32°, there were 14 in October, 23 in November, it was below 32° every day during the whole of December, January, February, March, and every day in April except 4

the 5th, 26th, 29th and 30th. It was also registered 4 times below 32° in May. It therefore appears that during the last winter the thermometer sank below freezing 189 nights, or rather more than half the year.

The river St. Lawrence was frozen across, opposite Quebec, on the 6th February, and broke up on the 24th April.

The river St. Charles ice broke up on the 5th of May.

If my observations had been continued during the whole of this year, I believe we should have obtained a very close approximation to the mean temperature of Quebec, as in my opinion the great cold of last winter would be compensated for by the heat of the summer, and thus Col. Sabine's remark with regard to the temperature of Toronto may perhaps be extended to Montreal and Quebec, viz: that with great fluctuations of the monthly there is very little fluctuation in the annual temperature.

In the absence of all Authentic Thermometric Registers at Quebec, it is difficult to arrive at a true mean annual temperature. Kaemtz, in his treatise on meteorology, gives as the result of 13 years observation 43°.7 as the mean temperature of Montreal. Dr. Smallwood makes the mean temperature of Montreal, for the year 1853, 42°.9, and I would assign 38.5 or 38 as the probable mean temperature of Quebec.

It may shew in some degree the difference between our climate and that of Europe, if I remark that the mean temperature of Paris and London, both of which places are north of Quebec, are respectively 51.4 and 50.7, and (although last winter is not to be taken as an average,) while our coldest month was 7°.5, the mean coldest month at Paris is 35°.2 and that at London 37.4.

ELASTICITY.—The mean elasticity for the month of December is .096, for January .064, for February .065, March .116, and for April .150, giving a mean elasticity, for the winter quarter, of .073. inches of Mercury.

HUMIDITY.—The mean humidity for December was, (saturation being represented by 1.00,) .84, for January .79, for February .74, March .82, and April .81, and the mean for the three winter months was .79.

RAIN.—No appreciable amount of rain fell in December, January, or February; there being only one shower in January.

.13 inches fell in March on two days, and 2.85 inches in April on five days, the rain on the 16th March being accompanied by thunder and lightning.

SNOW.—Snow was observed on the mountains on the 7th October, and the first snow fell in Quebec upon the 24th of the same month.

The depth of snow measured during

October	was	3 ins., which fell on	1 day.
November,	"	15 ins.	7 days.
December	"	37.5 ins.	14 "
January,	"	41.5 ins.	17 "
February,	"	43.9 ins.	11 "
March,	"	55.8 ins.	13 "
April,	"	3.3 ins.	5 "

Making a total of 200 ins., or 16 ft. 8 ins., which fell during 68 days.

It may be observed that this method of measuring the snow after every fall, in some level place, is liable to a very serious objection, as it is evident that, if 9 ins. fall, the quantity must be considerably greater than 9 times the amount measured, should only one inch fall.

Mr. Campbell and myself, who are carrying on the Meteorological Observations for the ensuing winter, purpose reducing the snow, after each fall, to water, with the view of comparing the actual amount of snow that falls, for different measurements.

WIND.—The number of observations recorded is not sufficient to determine accurately either the prevailing wind or the mean velocity.

The W. N. W., however, seems to be the most prevalent wind, and the mean recorded velocity is 9.5 miles per hour.

CLOUD.—The various descriptions of clouds observed, appear in the Meteorological Register. I will only remark, that before and after great magnetic disturbances, the clouds at considerable elevations have been frequently observed arranged in bands, sometimes parallel to, and sometimes at right angles to, the Magnetic Meridian.

AURORA.—The Aurora Borealis has been observed at Quebec upon 117 nights.

The accompanying table shews the number of auroras observed in Quebec, Montreal and Toronto during the annexed months. It also shews the number of nights on which is was possible to see aurora at each station.

	QUEBEC.		MONTREAL		TORONTO.	
	Observed	Possible to see.	Observed	Possible to see.	Observed	Possible to see.
August.....	10	10	3	22	3	23
September..	13	15	6	14	7	19
October.....	12	16	1	17	4	16
November..	3	3	2	9	2	7
December,..	9	11	3	10	5	8
January,....	9	14	4	11	3	10
February,...	9	13	5	10	4	12
March,.....	10	12	6	7	12	19
April, ...	16	17	5	8	8	15
May, ...	4	4	5	15	6	17
September,.	14	14				
October, ...	8	9				
	117	138	40	123	54	146

It appears from this table, that while aurora was visible at Quebec 117 out of 138 possible nights, it was only visible at Montreal 40 out of 123 possible nights, and at Toronto 54 out of 126, or 85, 32, and 37 per cent. respectively.

I think we may attribute the difference in the percentage between Montreal and Toronto to the fact, that at Montreal there is only one observer, while at Toronto there is watch kept up all night.

I regard the difference between Quebec and Montreal as very remarkable; for example: during the latter half of the month of August, aurora was visible at Quebec upon every possible night, while at Montreal and Toronto there was the same number (3) observed out of 22 possible nights in the former, and 23 in the latter place. Now at Quebec all the auroras observed, with the exception of two or three were either low arches of about 5° or 6° above the horison, or faint auroral light. Hence I am led to the conclusion that Quebec is on the verge of that circle round the magnetic pole, within which aurora is observed nearly every clear night.

When we reflect that the majority of clear nights upon which aurora is recorded occur near full moon, and also that a single observer can watch only during a very small portion of the night, I think we may assume that aurora is visible here nearly 95 out of 100 possible nights.

Last winter is remarkable for the splendor and frequency of auroras of the first class.

I transcribe from the Journal of Auroras the description of the aurora of the 10th April, the most splendid I have ever seen, and remarkable for the accompanying great magnetic disturbance.

It is worthy of observation, that at this period of great

magnetic disturbance, violent storms and hurricanes occured in different parts of the globe.

"10th.—At two, P. M., I noticed the clouds, (chiefly ci. cu.), arranged in, and parallel to, the magnetic meridian—the early part of the night hazy, and a very fine lunar halo, 40° in diameter, visible from 8 till 12. I first saw aurora at 11¼, P. M.; the chief characteristics were then a number of streamers changing to brilliant colours very rapidly, and a good deal of motion from W. to E. There was a total absence of the usual dark segment, and very little brilliance near the north horison. There was a narrow band of luminous vapour occasionally, of the most brilliant colours, passing through the zenith at right angles to the magnetic meridian. Corona formed at 11 h. 45 m. At about 12 h. 10 m. the chief display was in the north, spreading E. and W., and there was a great deal of motion from north towards the zenith. I cannot express it better than by saying, that for about 6 minutes it appeared as if a flood of luminous matter was flowing towards the zenith with immense rapidity. At 12 h. 59 m. large patches of streamers in the N. E. At 1 h. 10 m. streamers in the north. At 1 h. 12 m. a great deal of motion from W. to E. At 1 h. 28 m. no violent motion; streamers N. E. At 2 h. 45 m. there was precisely the same appearance in the S. E. as there had formerly been in the N. W. (at 11¼.) The corona reformed, and the appearance was magnificent. Brilliant patches appeared in every direction, except due north, where there were long lines of luminous cirrus clouds at right angles to the magnetic meridian. There was also a great deal of motion from W. to E. After this the aurora appeared in patches near the north horison. At 6 h. 15 m. was the maximum of magnetic disturbance. At 6 h.

24 m. I thought I saw aurora; not the slightest appearance of a cloud in the sky.

"This aurora was observed at Toronto, but owing probably to its late appearance, it is not noticed in the Montreal observations, although the same characteristics distinguished the sky at 10, P. M.

"I lay upon the table a copy of the magnetic disturbance on this day, as registered at Greenwich and Quebec.

Monthly Meteorological Register, Quebec, Canada East.—December, 1858.

BY LIEUT. A. NOBLE, R.A.

Latitude, 46 deg. 49·2 min. North; Longitude, 71 deg. 16 min. West. Elevation above the level of the Sea, — Feet.

Date.	Barometer corrected and reduced to 32 degrees, Fahr.				Temperature of Air.				Elasticity of Air.				Humidity of Air.				Direction of Wind.			Velocity of Air.			Rain in Inch.	Snow in Inch.	Remarks.
	6 A.M.	2 P.M.	10 P.M	MEAN	6 A.M	2 P.M.	10 P.M.	MEAN	6 A.M.	6 P.M.	10 P.M.	M'N.	6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	6 A.M	2 P.M.	10 P.M.			
					°	°	°	°																	
1	29.950	29.914	29.910	29.925	23.0	23.2	24.0	23.4	.111	.093	.129	.111	87	73	95	85	N E	E N E	E N E	15.2	11.4	8.	...	...	
2	.903	.919	.863	.895	20.5	20.0	19.0	19.8	093	090	092	093	85	89	87	84	N E	N E	E N E	13.9	13.4	14.3	...	...	1st. At about 11½ a.m. light
3	.767	.702	.740	.736	20.0	23.4	18.0	20.4	082	120	092	098	90	93	81	88	E b N	E N E	E	11.4	10.9	6.2	...	3.0	cirrus clouds at a great eleva-
4	.879	.944	30.040	.954	4.4	9.0	2.5	5.3	047	051	040	043	81	73	75	76	N N W	N W	N W	10.9	8.8	8.	...	...	tion; at L s. to the meridian.
5	30.054	30.057	.055	30.055	3.3	12.0	13.0	9.4	041	053	034	053	76	66	76	73	N W	Calm	Calm	8.	...	...	...	1.0	Aurora Visible.
6	29.920	29.603	29.349	29.627	20.4	24.3	26.0	23.6	092	119	130	116	81	88	96	88	E	E b S	E b S	10.1	11.4	10.1	...	5.6	2nd. A very faint Aurora.
7	.474	.814	.805	29.698	21.5	25.1	17.0	21.2	112	106	075	098	94	77	77	83	Calm	N N W	N N W	...	8.8	8.	...	...	3rd. Snowing from 12½ to 7½
8	.930	.808	.849	.882	16.8	23.5	21.6	21.0	089	108	117	105	91	83	97	90	N N W	N N W	Calm	6.2	3.8	...	...	2.5	p. m. Aurora visible.
9	.734	.789	.748	.757	27.0	35.0	1.5	31.1	125	156	153	145	84	77	87	83	W	W b S	W b S	5.2	3.8	3.8	...	...	4th. A good Aurora appeared
10	.755	.766	.760	.762	32.5	37.5	34.3	34.4	166	180	175	174	91	80	93	88	N N W	W N W	W N W	3.8	3.8	3.8	...	...	at 6, still visible at 11.
11	.793	.805	.862	.820	30.8	32.8	30.6	31.1	159	163	144	155	93	88	88	90	N W	N W	Calm	3.8	3.8	...	...	...	6th. Snowed 1½ to 10½ p.m.
12	.874	.853	.857	.861	26.5	35.6	31.7	31.3	140	162	158	153	96	78	89	88	Calm	Calm	E	...	...	8.	...	...	7th. A very faint Aurora.
13	.855	.974	30.046	.958	30.2	32.0	17.0	26.4	102	171	091	141	96	95	92	94	Calm	E b N	Calm	...	5.2	...	...	...	8th. Snowed from 5½ a.m. to
14	30.006	.850	29.762	.873	10.3	24.8	24.3	19.8	051	116	113	093	69	85	84	79	Calm	N W	N W	...	5.2	8.	...	...	2 p.m.
15	29.760	.817	.770	.782	25.5	33.0	30.2	29.6	121	156	149	141	84	83	88	85	N N W	N N W	W N W	6.2	5.2	3.8	...	...	12th. Aurora visible at 6 a.m.
16	.703	.648	.573	.641	30.5	35.2	36.3	34.0	135	178	155	156	79	87	73	80	Calm	W b N	W b N	...	3.8	3.8	...	1.5	Not visible previously.
17	.491	.122	.341	.410	33.3	38.5	29.0	33.6	183	198	144	175	97	85	90	91	Calm	E b N	E b N	...	6.2	19.	...	3.5	13th. Cirrus clouds L s. to
18	28.893	28.844	.127	28.954	27.5	24.2	11.5	21.1	137	112	058	102	90	84	75	83	E N E	Var.	N W	19.7	11.4	13.9	...	0.5	meridian at 2 p.m.
19	29.451	29.689	.650	29.597	-2.5	0.4	-6.5	-2.9	029	044	027	033	67	99	76	78	N W	N W	N W	8.0	8.	3.8	...	...	14th. Lunar halo 60° in dia-
20	.857	.931	30.048	.965	-17.8	-4.8	-8.0	-10.2	012	031	027	023	59	86	84	76	N W	N W	N W	3.8	3.8	3.8	...	...	meter at 6 o'clock p.m.
21	30.078	30.095	30.056	30.077	-3.0	7.8	5.0	3.2	028	033	047	042	63	79	79	74	N N W	N N W	N N W	5.2	5.2	3.8	...	...	15th. At 1 p.m. cirrus clouds
22	29.994	29.917	29.882	29.931	10.3	15.8	18.0	14.7	059	082	089	077	89	87	87	85	E	E	E b N	5.2	13.4	8.	...	1.5	at L s. to meridian.
23	.048	.266	.102	.339	20.8	22.0	27.5	23.7	114	119	132	122	97	94	87	93	E N E	E N E	E N E	10.1	11.4	6.2	...	0.5	22nd. Sky covered with clouds
24	.044	.104	.106	.084	24.5	136	3.5	13.8	109	071	041	074	81	82	74	79	N N W	N W	N N W	9.3	8.	8.	...	...	but in the north a dark arch,
25	.284	.404	.408	.395	4.3	15.8	15.5	12.2	018	087	088	074	84	93	95	90	N W	N W	N W	9.3	7.2	8.	...	...	and a glow above it; thought
26	.454	.355	.369	.393	10.5	20.5	21.0	17.3	035	093	103	098	68	85	88	80	E N E	E N E	E N E	9.3	11.4	10.9	...	1.5	it might be Aurora. Observed
27	.421	.386	.346	.384	22.5	23.1	11.5	19.0	104	122	083	098	96	90	79	99	N b W	N b W	W N W	9.3	8.8	13.9	...	1.8	this about 9 p.m.
28	.331	.524	.611	.488	4.5	5.2	-2.5	2.4	063	058	021	041	77	95	48	73	W N W	N N W	N N W	13.9	10.9	7.2	...	...	26th. Lower stratum of clouds
29	.522	.322	.082	.309	-8.0	3.2	2.0	-0.9	029	047	040	039	83	84	77	83	Calm	N N W	N N W	...	8.8	10.9	...	3.0	moving; with the wind E.N.E.
30	.197	.449	.580	.408	-3.5	6.0	1.0	1.2	029	043	045	039	71	70	90	77	N W	N W	N W	10.1	8.	6.2	...	1.0	Upper stratum S.S.E.
31	.492	.530	.735	.585	9.8	14.2	13.5	12.5	032	085	068	072	85	96	79	87	N W	E S E	E S E	6.2	6.2	6.2	...	2.0	
M	29.660	29.665	29.660	29.662	15.3	20.4	16.8	17.5	.091	.105	.093	.096	83	84	83	84				6.9	7.3	6.9	6.0	37.3	

Greatest Barometer, at 2 p.m. on the 21st..... 30.059 } Monthly Range, 1.251 in.
Least Barometer, at 2 p.m. on the 18th..... 28.844 }

Greatest Daily Range, on the 18th..... 30°·0
Least Daily Range, on the 2nd..... 3°.5

Monthly Meteorological Register, Quebec, Canada East.—January, 1854.

BY LIEUT. A. NOBLE, R.A.

Latitude 46 deg. 49.2 min. North: Longitude, 71 deg. 16 min. West. Elevation above the level of the sea, — Feet.

Date.	Barometer corrected and reduced to 32 degree, Fahr.				Temperature of Air.				Elasticity of Air.				Humidity of Air.				Direction of Wind.			Velocity of Miles.				Inches of Rain.	Inches of Snow.	Remarks.
	6 A.M.	2 P.M.	10 P.M	MEAN	6 A.M	2 P.M.	10 P.M.	MEAN	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	6 A.M	2 P.M.	10 P.M.	M'N			
					°	°	°	°																		
1	29.748	29.542	29.496	29.595	16.0	23.5	21.0	20.2	.081	.107	.111	.030	.86	.82	.96	.88	E S E	E S E	Calm	12.4	10.9	...	7.8	...	3.5	2nd. Aurora appeared at ¼ to 7 p.m. Was obscured by the clouds at about 10 p.m. Very faint. Luminous circle and dark arch underneath.
2	.544	.587	.584	.572	18.3	26.5	17.5	20.7	100	127	095	107	96	86	94	92	W N W	W N W	W N W	3.8	6.2	6.2	5.4	...	1.5	
3	.970	.992	.898	.953	15.4	20.0	17.5	17.6	083	097	082	087	89	87	80	85	W S W	W S W	W S W	6.2	5.2	...	3.8	...	...	
4	.591	.432	.435	.486	23.5	33.8	41.0	32.7	117	157	183	159	91	80	72	81	W b s	W b s	W	3.8	6.2	11.5	7.1	...	...	
5	.829	.989	.866	.895	23.5	21.5	15.0	20.0	104	090	079	079	80	76	77	77	N W	W N W	E b s	8.0	6.2	13.5	9.2	...	3.8	
6	.482	.530	.870	.627	16.4	22.2	-1.0	12.5	091	105	041	088	93	86	91	90	E b s	W b N	W N W	14.5	8.8	8.0	10.5	...	0.2	
7	.914	.847	.791	.851	-5.0	7.7	5.8	2.8	027	053	054	035	72	79	87	79	N N W	W N W	W N W	12.4	10.1	6.2	9.6	...	1.0	
8	.799	.548	.683	.676	6.0	15.2	0.0	7.1	029	082	034	038	92	89	70	84	W b N	W b N	W b s	7.2	8.8	6.2	7.4	...	...	
9	.684	.808	.953	.815	-7.4	-7.0	-14.5	-9.6	027	027	016	023	79	80	69	76	W N W	W N W	W N W	6.2	6.2	3.8	5.4	...	...	
10	30.054	.979	30.020	30.018	-21.4	0.0	0.0	-7.1	008	044	045	032	50	93	95	79	W N W	E N E	E N E	3.8	3.8	3.8	3.8	...	1.5	
11	.123	30.073	.075	.090	9.0	13.4	17.5	13.3	065	067	080	071	93	79	79	84	E N E	E N E	E N E	8.8	10.1	13.9	10.9	...	4.0	
12	29.622	29.377	28.892	29.297	22.0	26.0	30.3	26.1	106	138	164	136	87	97	97	94	E N E	E N E	E N E	27.8	34.1	30.1	30.6	...	3.0	3rd. Not visible at 8 p.m.
13	.028	.045	29.051	.041	33.7	37.3	34.5	35.2	182	184	143	173	95	83	73	83	N N W	W b s	W b s	10.1	8.0	5.2	7.8	...	1.0	Visible again at 8¼ p. m.
14	.077	.460	.812	.449	29.8	17.5	7.0	18.1	140	084	054	096	84	83	83	83	W S W	W b s	W b s	8.0	10.1	8.0	8.7	...	...	Commenced to snow at 11 p.m.
15	30.026	30.111	30.108	30.082	-3.2	7.0	5.5	3.1	032	053	044	050	78	81	73	77	W b s	W b s	W b s	8.0	8.0	8.2	8.1	...	1.0	Aurora again visible at 9¼ p.m.
16	29.825	29.545	29.665	29.678	6.3	8.3	11.5	8.7	040	054	061	052	94	95	78	89	E b N	E b N	W b s	25.4	22.7	13.9	20.6	...	3.0	
17	.688	.702	.911	.767	15.3	22.8	11.3	16.5	080	106	063	085	93	84	80	86	W b s	W S W	W	9.4	8.0	10.1	9.2	...	...	9th. No Aurora.
18	.945	30.117	30.126	30.063	0.0	6.0	4.6	3.5	035	050	042	042	75	80	73	76	W	W	Calm	6.2	6.2	...	4.1	...	...	
19	30.001	29.937	.106	.015	-5.2	11.3	4.5	3.5	033	068	053	051	90	86	90	89	Calm	W b s	E N E	...	3.8	8.0	5.9	...	1.5	19th. Very stormy.
20	29.940	.707	29.465	29.704	7.5	8.5	7.5	7.8	057	064	061	060	87	93	93	91	E N E	E b N	E	16.0	22.7	21.2	20.0	...	3.0	
21	.176	.357	.311	.208	11.0	21.5	7.5	13.3	070	102	052	075	93	85	70	86	E	S W	W	8.0	8.0	11.8	9.1	...	3.0	21st. A very dark cloud visible in the north extending from N.N.W. to N.E. A light shining through the clouds above it.
22	.864	30.035	30.103	30.000	-16.0	-7.5	-12.6	-12.0	009	023	018	016	24	61	67	48	W	W	W	12.0	11.3	8.0	11.0	...	...	
23	.995	29.920	.999	29.994	-11.5	1.5	-6.5	5.5	024	034	028	029	93	66	80	80	E	E N E	E N E	8.0	8.8	8.2	7.0	...	...	
24	.928	.676	29.984	.863	-12.5	-7.2	-7.0	-8.9	017	029	029	022	61	67	84	67	W b s	W b s	W	8.2	8.8	8.8	8.2	...	...	
25	30.378	30.415	30.374	30.389	-21.5	-11.5	-16.5	-13.2	007	019	010	011	24	63	47	45	W	W	W	8.8	8.2	8.2	8.7	...	1.0	
26	29.816	29.461	29.418	29.565	-2.5	3.5	6.5	2.5	028	038	055	040	65	68	87	74	E b s	E b s	E b s	10.1	8.0	6.2	8.1	...	3.0	
27	.519	.532	.594	.548	5.6	15.5	0.0	7.0	047	063	035	048	78	67	76	74	E	W	W	10.1	8.0	5.6	8.1	...	...	
28	.886	30.060	30.294	30.080	-15.8	-3.0	-15.4	-11.4	013	028	016	019	62	60	75	66	W	W N W	W N W	10.1	8.0	5.6	7.9	...	...	
29	30.383	.420	.440	.414	-26.8	-7.3	-14.2	-16.1	009	020	012	014	70	57	49	59	N N W	W N W	W N W	6.2	6.2	6.2	6.2	...	...	
30	.254	.052	29.905	.037	-22.7	5.4	13.5	-1.3	008	044	065	039	48	73	76	66	W N W	W	W	6.2	3.8	3.8	4.6	...	...	
31	29.593	29.304	.220	29.542	27.5	32.4	31.2	29.6	112	104	148	141	86	90	94	87	W	W	W	3.8	6.2	6.2	5.0	...	4.0	
M	29.793	29.709	29.787	29.776	3.5	11.7	7.2	7.5	0.066	0.075	0.063	0.064	78	79	79	79				9.3	9.1	7.7	8.7		41.0	

Highest Barometer at 10 p.m. on the 29th ..... 30.440 } Monthly Range, 1.548 in.
Lowest Barometer, at 10 p.m. on the 12th ..... 28.892 }

Maximum Thermometer ..... 43°.0 } Monthly Range, 72°.0
Minimum Thermometer ..... -29°.0 }

Greatest Daily Range, on the 29th ..... 40°.6
Least Daily Range, on the 20th ..... 3°.5

Warmest Day, the 4th ..... 39°.7 } Ultimatic Difference, 81°.8.
Coldest Day, the 29th ..... -16°.1 }

Monthly Meteorological Register, Quebec, Canada East.—February, 1854.

BY LIEUT. A. NOBLE, R.A.

Latitude, 46 deg. 49·2 min. North; Longitude, 71 deg. 16 min. West. Elevation above the level of the Sea, — Feet.

Date.	Barometer corrected and reduced to 32 degrees, Fahr				Temperature of Air.				Elasticity of Air.				Humidity of Air.				Direction of Wind.			Velocity of Miles.			Rain in Inch.	Snow in Inch.	Remarks.
	6 A.M.	2 P.M.	10 P.M	MEAN	6 A.M	2 P.M	10 P.M.	MEAN	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	6 A.M	2 P.M.	10 P.M.			
					°	°	°	°																	
1	29.193	29.171	29.272	29.212	25.5	36.0	34.6	32.0	.124	.153	.176	.151	88	73	89	83	N W	N W	N W	8.8	8.0	7.2	...	0.2	
2	.404	.582	.697	.561	15.4	12.5	5.7	11.2	066	068	046	060	71	80	76	76	N W	W	E	11.3	10.1	8.0	...	...	
3	.875	.882	.933	.903	-4.6	4.5	-6.3	-2.1	027	045	023	032	71	77	63	70	E	E	E	8.0	8.8	8.0	...	...	
4	.979	30.011	30.114	30.035	-21.8	-1.5	-9.4	-10.9	010	035	018	021	59	76	57	64	W N W	W N W	W N W	9.4	8.8	8.0	...	...	
5	30.091	29.987	.068	.048	-23.0	0.0	-19.5	-14.2	008	030	000	013	48	63	00	37	W	Calm	Calm	3.8	...	...	...	...	
6	.086	30.104	.175	.122	-11.6	-2.0	-7.5	-7.0	020	028	024	024	70	65	69	68	N N W	N b W	W b N	3.8	8.0	8.0	...	...	5th. River St. Lawrence froze across opposite Quebec. The ice was, however, swept away by the tide.
7	.179	.200	.165	.181	-16.7	†7.5	-9.8	-6.3	012	043	023	029	53	64	77	65	W	W b N	W	8.0	6.2	8.8	...	...	
8	.101	29.813	29.341	29.751	-10.4	12.0	15.6	5.7	018	060	072	050	59	75	77	70	E	E	E	11.3	19.7	11.3	...	6.0	
9	29.168	.205	.254	.209	18.3	28.0	29.4	25.2	079	138	141	119	76	89	87	84	E	E	E	10.1	8.0	8.0	...	1.0	
10	.333	.469	.813	.538	20.6	27.4	3.4	17.1	092	121	044	089	81	80	78	80	W b S	W b N	W b N	7.2	6.2	6.2	...	...	
11	30.052	30.083	30.222	30.119	-15.6	2.4	-6.0	-6.4	014	042	023	026	62	80	63	68	W	W	W	6.2	7.2	8.0	...	...	6th. The St. Lawrence again frozen across, and the ice-bridge remained.
12	.250	.262	.247	.253	-16.2	6.5	-4.0	-4.6	009	045	026	027	42	70	65	59	W	E b S	E	8.0	8.0	13.4	...	...	
13	.096	29.962	29.824	29.961	8.2	15.0	22.0	15.0	059	078	106	081	87	85	87	86	E	E	E	22.7	32.1	32.1	...	6.6	
14	29.855	.963	30.005	.941	24.5	26.5	21.5	24.2	117	126	098	080	87	86	81	85	E	E	E	34.1	39.4	34.1	...	2.0	
15	.866	.729	29.626	.740	22.5	24.5	26.6	24.5	101	117	134	117	81	87	95	88	E	E	E	27.8	16.0	11.3	...	5.0	
16	.652	.608	.675	.645	22.5	30.0	15.5	22.6	101	150	072	108	81	90	77	83	N W	N W	W N W	10.1	13.9	10.9	...	0.2	
17	.820	.810	.825	.818	10.5	23.4	13.5	15.8	077	114	071	087	55	88	82	75	N	W	W	8.8	10.1	10.9	...	...	28th. Brilliant Aurora at 12. The whole of the northern horizon was of a pale, violet colour, and there was one patch of streamers in the N.E.
18	.698	.518	.473	.563	15.4	31.0	25.5	23.9	076	150	119	115	83	85	85	84	N	W	W	13.3	19.5	16.0	...	3.0	
19	.900	.947	30.066	.971	-8.6	3.3	-7.0	-4.1	022	039	024	028	67	71	67	68	W	W	W	10.9	8.0	7.2	...	...	
20	30.116	30.051	29.983	30.050	-16.5	9.5	-1.8	-2.9	012	059	034	035	55	81	75	70	W	N W	Calm	8.0	3.8	...	...	...	
21	29.882	29.781	.777	29.813	-8.0	17.0	3.3	4.1	022	075	043	048	66	77	82	75	E	E N E	E N E	8.8	9.4	8.0	...	...	
22	.674	.438	.363	.492	5.0	26.0	21.5	17.5	047	128	098	091	79	88	81	83	E N E	E N E	E N E	8.0	8.0	8.0	...	5.5	
23	.445	.616	.866	.642	14.0	18.0	-1.5	10.2	074	083	036	066	84	87	81	84	E N E	N W	N W	11.3	11.5	11.3	...	...	
24	.854	.857	.962	.891	-8.6	9.5	-2.5	-0.5	021	057	025	034	65	79	56	67	W	W N W	W N W	10.1	9.4	8.8	...	...	
25	30.391	30.496	30.468	30.451	-20.8	0.0	-8.0	-9.6	012	035	022	023	61	76	66	68	W b N	W b N	W b N	10.1	8.0	8.8	...	...	
26	.252	29.974	29.401	29.876	4.0	18.5	24.4	15.6	045	086	121	084	79	82	91	84	E S E	E b S	E b S	8.0	7.2	10.9	...	14.0	
27	29.522	.863	30.176	.854	-17.0	23.7	11.5	17.0	094	098	058	083	92	75	75	81	W b S	W b N	W b N	10.9	13.9	6.2	...	...	
28	30.330	30.194	.000	30.175	1.0	24.0	14.5	13.2	021	108	075	068	51	82	85	73	W b N	W	W	7.2	8.8	9.4	...	1.0	
M	29.859	29.834	29.850	29.850	1.5	16.4	7.3	8.1	.049	.083	.063	.065	70	79	74	74				10.8	11.3	10.2		43.9	

Highest Barometer at 2 p.m. on the 25th..... 30.496
Lowest Barometer, at 2 p.m. on the 1st..... 29.171
} Monthly Range, 1.325 in.

Maximum Thermometer, on the 1st..... 36°.0
Minimum Thermometer, on the 5th..... -24°.0
} Monthly Range, 60°.0

Greatest Daily Range, on the 10th..... 43°.1
Least Daily Range, on the 15th..... 4°.0

Warmest Day, the 1st; mean temperature..... 32°.0
Coldest Day, the 5th; mean temperature..... -14°.0
} Climatic Difference, 46°.2

Monthly Meteorological Register, Quebec, Canada East.—March, 1854.

BY LIEUT. A. NOBLE, R.A.

Latitude, 46 deg. 49·2 min. North; Longitude, 71 deg. 16 min. West. Elevation above the level of the Sea, — Feet.

Barometer corrected and reduced to 32 degrees. Fahr.				Temperature of Air.				Elasticity of Air.				Humidity of Air.				Direction of Wind.			Velocity of Miles.			Rain in inch	Snow in inch	Remarks.
6 A.M.	2 P.M.	10 P.M	MEAN	6 A.M	2 P.M	10 P.M.	MEAN	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	6 A.M	2 P.M.	10 P.M.			
				°	°	°	°																	
29.920	29.871	29.887	29.893	10.0	33.8	32.0	25.2	.058	.164	.156	.126	79	85	87	84	W S W	W S W	W S W	6.2	6.2	8.0	...	...	7th. Snowing slightly.
30.062	30.099	30.156	30.105	24.0	25.5	11.5	20.3	116	109	058	094	87	78	75	80	E b N	E N E	E N E	5.2	7.2	12.4	...	...	8th. Heavy fog during the
29.943	29.704	29.622	29.756	19.5	20.5	21.5	20.5	095	092	098	095	86	81	81	83	E N E	E N E	E N E	21.2	21.2	16.0	...	6.0	morning.
.589	.902	.452	.647	24.0	29.6	25.5	26.3	116	143	134	131	87	87	95	90	E N E	E N E	E N E	6.2	8.0	5.2	...	4.0	16th. Thunder and light-
.406	.534	.603	.515	25.0	38.0	23.5	28.8	112	140	112	121	81	62	86	76	W	S W	S W	5.2	8.0	5.2	...	...	ning, accompanied with hail
.804	.808	.982	.865	18.0	31.0	24.6	24.5	082	117	117	105	80	67	87	78	S W	S W	S W	5.2	10.1	8.0	...	...	and rain.
.897	.765	.702	.788	21.4	39.8	23.2	28.1	100	156	111	122	84	64	86	78	W b S	W b S	Calm	5.2	5.2		...	0.5	
.685	.480	.386	.517	10.4	29.5	25.0	21.6	060	149	122	110	80	93	88	87	Calm	E b N	E b S	...	13.9	31.2	...	5.0	20th. Clear, but no Aurora
.601	.720	.788	.703	25.4	31.4	28.0	28.3	115	140	139	131	82	80	89	84	E b S	E b S	E b S	21.2	21.2	12.4	...	...	observed.
.650	.592	.415	.529	27.8	32.8	30.0	30.2	135	145	134	138	88	78	80	82	E b S	E b S	E b S	13.9	16.0	16.0	...	7.0	
.473	.717	.397	.596	27.4	43.0	38.6	36.3	141	169	204	171	93	62	87	81	N b W	N W	N W	11.3	10.9	10.1	...	...	21st. Aurora observed. A
.590	.681	.677	.586	26.5	42.5	38.6	35.8	128	176	186	163	87	66	80	78	N W	N W	N W b W	8.0	8.0	7.2	...	...	luminous arch with dark seg-
.722	.774	.915	.803	37.5	35.4	32.0	35.0	178	127	171	159	79	61	95	78	N W b W	E b S	E b S	5.2	6.2	8.0	0.04	1.0	ment, but no streamers.
.975	.732	.630	.779	24.0	25.6	26.2	24.9	104	128	142	125	81	90	98	90	E b S	E b S	S E	13.9	22.1	12.4	...	0.5	
.653	.658	.442	.591	28.6	46.0	35.5	36.7	145	218	188	184	92	70	91	84	S W	S W	S W	8.8	8.0	8.0	...	...	22nd. Aurora observed. Two
28.932	28.822	28.910	28.890	38.5	48.8	38.0	41.8	209	213	153	158	91	63	68	74	Calm	W	N W	...	10.1	9.6	0.09	0.3	mock suns seen, 10 p.m.
29.021	29.131	28.987	29.046	30.0	40.3	26.5	32.9	141	241	134	172	84	97	84	88	N W	W	W b N	11.3	16.0	13.9	...	3.0	23rd and 24th. Very heavy
28.781	28.948	29.446	.058	7.0	17.6	23.0	15.8	053	084	107	081	81	83	84	86	W N W	W N W	W b N	19.7	32.1	27.8	...	4.0	fall of snow.
29.678	29.570	.567	.605	7.5	22.8	8.5	12.9	032	103	050	068	79	81	78	78	N W b N	N W b N	N W b N	19.7	16.0	10.1	...	...	
29.730	.818	.980	.843	0.0	17.0	10.5	9.1	036	071	069	059	76	72	94	81	N W b N	N W b N	N W b N	10.1	11.3	10.9	...	...	26th. Aurora visible through
29.954	.977	30.008	30.012	1.3	24.0	10.0	11.7	041	082	060	061	82	63	81	75	N W b N	N W b N	N W b N	11.3	11.3	3.8	...	...	the clouds.
29.980	.804	29.618	29.801	−0.3	26.0	19.2	14.9	036	128	091	085	78	88	83	83	N W b N	N W b N	N W b N	8.0	6.2	10.1	...	...	
.465	.377	.319	.387	18.0	32.3	31.0	27.1	093	163	165	140	91	90	93	92	S E	S E	S E	10.1	13.9	20.2	...	9.0	29th. A comet visible just
.179	.088	.014	.093	28.6	30.8	28.0	29.1	137	144	128	136	87	83	83	84	S E	S E	S E	21.2	27.8	10.1	...	9.0	after sunset. A very remark-
.081	.047	.063	.064	16.3	23.0	17.0	18.7	090	123	085	099	93	97	86	92	W	W	W	11.3	19.7	16.0	...	2.0	able Aurora, consisting of three
.121	.201	.330	.217	8.0	23.0	19.8	16.9	059	086	092	079	87	67	82	79	W	W	W S W	19.7	19.7	19.7	...	...	arches; one in the north, an-
.409	.469	.571	.480	12.8	21.8	13.0	15.8	078	107	057	081	93	85	88	83	W S W	W S W	W S W	16.0	16.0	11.3	...	...	other passing through the
.638	.724	.864	.742	13.0	34.3	21.0	22.7	075	158	102	112	88	79	88	85	W b N	W b N	W b N	11.3	13.9	11.3	...	...	zenith, and a third in the south.
.924	.993	30.080	.999	13.0	27.2	13.5	17.9	052	124	071	082	62	82	82	75	W b N	W b N	W b N	10.1	7.2	5.2	...	...	
30.134	30.070	30.148	30.117	8.8	31.3	16.3	18.8	053	104	092	083	76	59	95	77	Calm	S W	Calm	...	5.2	...	...	...	30th. Aurora observed. A
30.163	30.073	29.871	30.036	18.0	26.2	29.9	24.4	097	113	148	119	94	79	94	89	Calm	E S E	E S E	...	8.0	...	...	...	great deal of motion.
29.615	29.618	29.624	29.619	18.3	30.6	23.9	24.3	.096	.136	.118	.116	84	77	85	82				10.2	13.1	10.9	0.13	55.8	

Greatest Barometer, at 6 a.m. on the 31st..... 30.163
Least Barometer, at 6 a.m. on the 18th..... 28.781
} Monthly Range, 1.382 in.

Maximum Thermometer, on the 18th..... 50°.0
Minimum Thermometer, on the 19th..... −2°.0
} Monthly Range, 52°.0

Greatest Daily Range, on the 17th..... 35°.0
Least Daily Range, on the 14th..... 5°.6

Warmest Day, the 16th; mean temperature..... 41°.8
Coldest Day, the 20th; mean temperature..... 9°.1
} Climatic Difference, 32°.7

Monthly Meteorological Register, Quebec, Canada East.—April, 1854.

BY LIEUT. A. NOBLE, R.A.

Latitude, 46 deg. 49·2 min. North; Longitude, 71 deg. 16 min. West. Elevation above the level of the Sea, — Feet.

Date.	Barometer corrected and reduced to 32 degrees, Fahr.				Temperature of Air.				Elasticity of Air.				Humidity of Air.				Direction of Wind.			Velocity of Miles.			Rain in inch.	Snow in inch.	Remarks.
	6 A.M.	2 P.M.	10 P.M	MEAN	6 A.M	2 P.M	10 P.M.	MEAN	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	6 A.M	2 P.M.	10 P.M.			
					°	°	°	°																	
1	29.476	29.215	29.341	29.344	32.0	39.2	35.0	35.40	.181	.266	.168	.192	90	95	83	93	E S E	Calm	E S E	3.8	...	10.1	0.25	...	2nd. Aurora visible, faint arch and dark segment underneath, at 10h. 15m. Bright streamers shot out suddenly.
2	29.637	29.877	30.120	29.878	23.3	31.3	17.2	23.93	113	139	087	113	87	79	87	84	E S E	W N W	W N W	5.2	8.8	7.2	...	...	
3	30.316	30.176	30.192	30.228	8.3	35.8	23.2	22.43	054	134	109	099	79	65	85	76	W N W	W N W	W N W	6.2	7.2	8.0	...	...	
4	30.106	30.042	30.080	30.076	26.0	44.2	36.2	35.47	130	172	155	152	91	60	73	75	Calm	W	W	...	8.0	7.2	...	...	
5	30.039	29.846	29.662	29.849	34.3	47.6	41.5	41.13	158	178	193	176	79	54	75	69	Calm	Calm	W	...	...	3.8	...	...	
6	29.547	29.370	29.276	29.398	41.2	52.2	43.3	45.57	236	281	253	257	92	73	91	89	Calm	W S W	W S W	...	3.8	3.8	0.24	0.2	
7	29.683	29.846	30.060	29.863	32.2	37.3	25.3	31.93	164	129	135	143	91	58	96	82	N N W	W N W	N	10.1	8.0	7.2	...	...	
8	30.111	30.032	29.920	30.021	23.6	36.0	28.3	29.10	108	175	136	140	86	82	97	88	E N E	E N E	E	8.0	8.8	3.8	...	0.3	
9	29.856	29.800	.700	29.785	30.0	36.2	32.3	32.87	134	208	160	167	80	89	88	86	E	E	E	8.0	8.8	13.9	...	0.3	
10	.507	.491	.568	.522	31.0	39.8	31.2	37.00	165	186	155	169	95	77	89	87	E	E	E	11.3	10.1	3.2	...	...	
11	.717	.776	.775	.756	30.8	36.0	27.0	31.27	159	192	123	158	93	91	82	89	N	E	Calm	8.8	8.0	...	...	...	
12	.788	.720	.865	.791	23.3	50.0	38.3	37.20	112	194	228	178	86	55	94	78	W	W	Calm	8.8	9.6	...	...	...	
13	30.070	30.143	30.257	30.157	25.0	27.5	...	...	122	131	...	...	88	86	...	...	E	E	N N W	10.1	11.3	12.4	...	...	
14	30.292	30.175	30.131	30.199	11.0	33.8	29.5	24.77	063	169	139	124	82	88	84	85	N N W	W S W	W S W	11.3	10.1	6.2	...	...	
15	30.055	29.930	29.888	29.958	21.8	32.0	26.0	29.93	094	127	132	118	78	70	92	80	Calm	E	E	...	5.2	5.2	...	...	
16	29.956	.989	.980	.975	15.8	31.8	24.5	27.37	082	158	111	117	87	88	82	86	E	E	E	3.8	5.2	3.8	...	...	
17	.992	.873	.749	.872	15.6	33.5	29.5	26.20	075	145	131	117	81	78	80	80	Calm	E	E	...	20.2	11.3	...	...	
18	.711	.589	.609	.634	30.3	36.5	30.0	32.27	132	188	134	151	78	87	80	82	E S E	E S E	E S E	11.3	8.0	6.2	...	...	
19	.582	.507	.429	.506	29.8	50.8	41.0	40.53	130	183	172	162	78	50	67	65	W	W	S	6.2	7.2	8.0	...	...	
20	.517	.544	.596	.552	34.2	48.6	38.8	40.53	167	175	153	165	85	52	66	68	S	S	S S E	7.2	4.2	5.2	...	...	
21	.720	.727	.749	.732	33.0	42.0	31.3	35.43	150	142	141	144	79	54	81	71	N W	E N E	E N E	6.2	5.2	5.2	...	...	
22	.762	.649	.593	.668	29.8	44.0	34.0	35.93	134	159	161	151	80	56	81	72	E N E	E N E	E N E	6.2	6.2	6.2	...	...	
23	.668	.744	.794	.735	38.0	40.0	34.0	37.33	138	129	094	120	61	53	48	54	E N E	Calm	Calm	13.9	...	...	...	...	
24	.835	.711	.584	.710	28.5	50.5	41.0	40.00	120	153	163	145	75	43	64	61	W S W	W S W	W S W	5.2	5.2	6.2	...	...	
25	.548	.546	.554	.549	34.0	54.7	43.0	43.90	...	...	...	...	...	...	...	...	W S W	W S W	Calm	8.0	6.2	...	...	...	
26	.546	.416	.303	.422	33.8	46.0	39.0	39.60	140	261	195	199	72	83	83	83	S	Calm	Calm	3.8	...	...	0.4	...	24th. The ice opposite Quebec gave way, but that at Cape Rouge still firm.
27	.450	.685	.803	.646	37.3	37.0	35.0	36.43	158	176	151	162	72	80	74	79	N	N	Calm	3.8	8.0	...	...	1.5	
28	.996	30.166	30.205	30.102	32.8	38.8	34.0	35.20	169	178	161	169	91	79	81	84	E	E	Calm	10.1	13.4	...	...	1.0	25th. Swallows seen.
29	30.240	30.246	30.081	30.189	33.8	39.6	36.0	36.13	164	156	175	158	85	65	82	77	E	E	E	11.3	16.0	21.2	1.1	...	26th. Wheel carriages employed in the town.
30	30.000	29.930	29.812	29.914	36.3	38.5	37.0	37.27	169	220	191	193	79	95	87	87	E	E	E	22.1	19.7	21.2	0.9	...	
M	29.8243	29.7887	29.7792	29.7974	28.73	40.82	33.19	34.23	.139	.176	.155	.156	86	76	81	81				7.02	7.48	6.28	3.89	3.3	

Maximum Barometer, at 6 a.m. on the 3rd..... 30.316
Minimum Barometer, at 2 p.m. on the 1st 29.215
} Monthly Range, 1.101 in.

Greatest Daily Range, on the 12th..... 31°·0
Least Daily Range, on the 14th..... 2°·8

ARTICLE 18.—*A View of Russian America in connection with the present War. By* A. R. ROCHE, *Esquire.*

[Read before the Society 7th March, 1855.]

Separated from Canada by a distance of some two thousand miles, yet associated with her in her ambitious, but reasonable expectations of the future, when the province, or new provinces under the same flag, shall extend from her great lakes to the Arctic Sea in one direction, and to the Pacific Ocean in another, is a valuable region possessed by that power with which we are now in a state or warfare, her present title to a great portion of which, has been obtained by imposture and persevering aggression upon her part, and through that former indifference of English statesmen to British territorial rights upon this continent, which has, at various periods, led to our giving away much of Canada, New Brunswick, and the Oregon territory to the United States, the most fertile districts of Newfoundland to France, and a large portion of the discoveries of Cook, Dixon and Vancouver, upon the north-west coast of America to Russia. By the convention of 1825 with the latter power, we even gave up all claim to any future discoveries, which might be made by British navigators upon the northern shores of this continent, lying within certain meridians. Thus much of the subsequent efforts, in 1826, of Franklin from the mouth of the Mackenzie, and of Beechey from

Behring's Straits, to explore the then unknown coasts between those points, and also the successful efforts, in 1837, of Simpson and Deese, to connect the discoveries of those officers, by tracing the coast from the extreme limit of Franklin's voyage from the east, to Point Barrow, where Beechy had penetrated from the west, were made, not for England, but for a powerful rival state.

Into the former claims of England, founded upon the discoveries of Cook, Dixon and Vancouver, and of Russia, supported by those of Behring and Kotzebue, to what is called Russian America, there is now little occasion for inquiry, for all treaties between the two powers having ceased to exist as soon as a declaration of war passed between them, the fact of the territory in question being held by Russia, would warrant Great Britain in taking possession of it at any moment and by any means. But it having been stated that a treaty has been entered into by England and France, under which, in the event of their making any conquest in the course of the present war, neither of them shall permanently retain any territory which it may so become possessed of, it is well that reasons, which exist for an exception being made in this respect in regard to Russian America, should be brought forward, before any contingency in that direction can happen, which might place England in an awkward position towards France.

Though the justice of the rival claims, originally put forth by England and Russia, to the territory under consideration, need not be analyzed here, to justify or to urge the capture of the territory by the former power, yet, among the reasons for excepting Russian America from the provisions of such a treaty, as the one above mentioned, may be brought forward the fact that England formerly laid claim to a great portion of the territory, the

justice of which claim, founded upon survey, as well as upon discovery, is indicated by the English names, which, even at the present day, mark many of its capes, inlets, bays and islands, and as could be proved, were a thorough examination to be made of the discoveries there of Cook and other British navigators, and of the Russian navigators in the same quarter, including those of Behring. The discoveries of the latter, about which the Russians have said so much, appear, in reality, hardly to have extended to the main land, hardly beyond the Aleutian and other islands lying between Asia and America, upon one of which, now called after him, he miserably perished. Though it is certain, that, from a distance, he saw the peak of Mount St. Elias, which is 17,000 feet high, yet it does not appear that Behring ever approached within sight of any other part of the territory, on the American continent, now held by Russia. The discoveries, which our own navigators have made along its northern coast, since the convention of 1825, should also give us a greater right to avail ourselves of any contingency of war, which might place Russian America within our power, and its contiguity to our own important possessions, a large portion of which it deprives of a seaboard upon an ocean, where we have already more at stake than any other nation, makes the territory the most desirable which we could wrest from Russia. While these reasons may be urged for our possessing ourselves exclusively of it, the greatest misfortune, which could happen to us in that quarter, would be, to allow it to fall into the possession of France or the United States; the only countries, besides Russia, which could in future attempt to become our rivals in the Pacific: the one through her extent of territory and her commerce upon that ocean, the other through her large fleet, and her desire (as evinced in her

recent occupation of New Caledonia, and the neighbouring islands), to acquire territory and influence there.

Few persons in England, or in Canada, have any knowledge of the extent and value of Russian America. With a coast upon the Pacific of some fifteen hundred miles in length, indented by numerous sounds and capacious harbours, and studded with many large islands of considerable resources, it extends back, for about one thousand miles of that coast, to a distance of nine hundred miles, and for the remaining five hundred miles of coast, to thirty miles, the latter being the portion in front of our possessions which it cuts off from the Pacific; while the peninsula of Alaska, about fifty miles in breadth, stretches out in the Pacific for upwards of three hundred miles: the whole territory comprising a surface of nine hundred thousand square miles. It is thus about sixteen times the size of England. It contains many mountain ranges of great height, and fine valleys, magnificently watered and fertilized by large lakes and rivers; the mountain ranges in the upper and broader portion of the territory, having a transverse direction, and therefore sheltering the valleys from northerly winds, which in that quarter are cold winds in summer, while, extraordinary as it may appear to many, in winter they invariably cause a rise in the thermometer. At both these seasons southerly winds produce effects directly opposite to the former, being warm winds in summer, and cold winds in winter. A great portion of this vast region (in some places to within a short distance of the Actic circle), is covered with forests of the largest and most valuable trees. Even upon some of the islands of Prince William's Sound, in 61° north latitude, where it might be expected that the influence of the wind and sea would prevent or retard the growth of trees, Cook found the Canadian and

spruce pine of a tolerably large size; and of the country adjacent to Norton Sound, lying in 64° 55′ north latitude, he says: "From the elevated spot on which Mr. King surveyed the sound, he could distinguish many extensive valleys, with rivers running through them, well wooded, and bounded by hills of a gentle ascent, and moderate height. One of these rivers appeared to be of considerable size. Some of the people, who penetrated beyond this into the country, found the trees larger the farther they advanced." In speaking of the resources of Russian America, Sir John Richardson, in his work upon "the Arctic searching expedition," quotes Bongard, with regard to one portion of it, who says, that "the hill of Westerwoi," near Norfolk Sound, in North latitude 58°, which is 3000 feet, French measure, in height, is clothed to its summit by a dense forest of pines and spruces, some of which acquire a circumference of twenty-one feet, and the prodigious length of one hundred and sixty feet, and that the hollow trunk of one of these trees, made into a canoe, is able to contain thirty men, with all their household effects." Sir John Richardson adds: "The climate of Sitka," (the name of the bay as well as of the island upon which is situated New Archangel, the chief post of the Russian company, lying in 57° N. latitude), "is very much milder than that of Europe on the same parallel, the cold of winter being neither severe nor of long continuance; the humidity of the atmosphere gives astonishing vigour to the vegetation, but although the forest, nourished by a very moist atmosphere and a comparatively high mean temperature, is equal to that of the richest woodlands of the Northern United States, yet corn does not ripen there." This humidity of the atmosphere, which is occasioned by the surrounding sea, is doubtless the cause of corn

not coming to perfection at Sitka; for some distance in the interior of the continent, as far east as the Mackenzie, in the territory occupied by the Hudson's Bay Company, the cereals are sucessfully cultivated, up to 60 degrees north latitude, and occasionally in some spots situated five degrees further north. In the neighbourhood of the Mackenzie, Sir John Richardson says that, "Fort Laird, on the 60th parallel, may be considered as the northern limit of the economical culture of wheat." As in the interior of Russian America the climate must be of a drier nature than upon the seaboard, and probably more in extreme; that is, colder in winter and warmer in summer, much of the interior may be well adapted for the growth of the cereals, although they cannot be succesfully cultivated at the Russian establishments upon the coast. The harbour at Sitka, and several other fine harbours in the neighbourhood, are open during the whole winter; thus showing an extraordinary contrast to the opposite coasts of Asia, which are ice-bound for three parts of the year. Even as high up as Behring's Straits a great difference of climate exists between the coasts of the Asiatic and American continents. In his "Travels round the World," Sir George Simpson remarks that, "although at some points Behring's Straits are only forty-five miles wide, in the general appearance of the two coasts there is a marked difference, the western side being low, flat and sterile, while the eastern is well wooded, and in every respect better adapted than the other for the sustenance both of man and beast. Moreover, the soil and climate improve rapidly on the American shore, as one descends; and at Cook's Inlet" (in 60 degrees N. latitude), "potatoes may be raised with ease, though they hardly ripen in any part of Kamtschatka, which extends nearly ten degrees further south. As, in addition to the advantages of culti-

vation, deer, fish, game and hay are abundant, the Russian Fur Company contemplates the formation of a settlement there for the reception of its own servants." The mildness of the temperature along the coast of the latter, when compared to the eastern coasts of this continent, is pointed out by Sir John Barrow, who, in his "Arctic Voyages of Discovery," says: "On the western coast of America, up as far as Cook's River, between the latitudes of 55° and 60°, the certhias and the humming birds are said to be chirping and singing, when, from Newfoundland, in 50°, down to Philadelphia, in 40°, frost and snow cover the water and the ground." Thus, both in soil and climate, a great portion of Russian America, bordering upon the sea, is not inferior to Europe in the same latitude, and is greatly superior to the eastern coasts of America and Asia, whether lying in the same, or in a much lower parallel. Sitka, for instance, which is in 57° north latitude, has a climate almost as temperate as that of London, in 51 degrees north latitude (the mean annual temperature of the former being 45° 44′, and that of the latter 49° 70′); and it has also about as mild a winter as the southern portions of Japan, situated in a much lower latitude. The superiority, however, of the soil and climate of Russian America, over the soil and climate of the opposite coasts of Asia, has been observed from the time of Kotzebue up to the present moment. That navigator remarks, when at East Cape, on the Asiatic side of Behring's Straits, that "the ice and snow had maintained their rule there since the year before," in which state he found the whole coast; "while at Cape Prince of Wales," in about the same parallel, and at other spots upon the American side, corresponding in latitude, to those he touched at on the opposite side of the straits, "all was verdure, the coast being covered with a green carpet, and

the summits of the mountains being free from snow." But we have still more recent evidence of the comparative mildness of the climate upon the American side, even in a higher latitude. At Point Barrow, in 71° north, where there is a large permanent Esquimaux village, and where Her Majesty's ship Plover wintered in 1852-3, her commander, Lieut. Pullen, reported that, during the entire winter, the fall of snow there did not exceed one foot in depth, and that on the coldest day the thermometer only marked 43 degrees below zero: a degree of cold not much greater than that which was experienced at Quebec last winter, where, also, the entire quantity of snow which fell during that period was about fifteen times greater than that reported as above to have fallen during the winter of 1852-3 at Point Barrow, situated twenty-three degrees further north. The comparatively moderate degree of cold experienced upon the shores of the Arctic Sea thus indicated, as well as the comparatively small quantity of snow that falls there (a fact also established by the experience of many Arctic voyagers), cannot but appear very extraordinary to many who have read the accounts of the intense cold and the heavy snow storms encountered further to the eastward by Franklin, Back, and others; but the phenomena may perhaps be explained by our attributing them to certain influences which are felt there, and which do not exist upon the north-eastern coasts of America and Asia. Among these influences may be mentioned the prevailing winds during the winter at Point Barrow, as observed by Lieut. Pullen. The winds were from east-north-east and north-east, and consequently from seaward, which, although coming from the Arctic Sea, must tend materially to ameliorate the climate there. The sea in those meridians, like the sea north of Europe, is apparently

[illegible] encountered by Franklin, and from the rolling swell from the northward, experienced by Franklin in his last voyage along the coast in that direction, in 1826, and from the pitching motion observed near the same spot, but further from the shore, by M'Clure in his recent voyage, that sea appears to be of vast extent, and to contain much open water. The same conclusion as to the existence of an open sea in that quarter, may also be arrived at from what had been observed in the still more recent voyage of Captain Collinson, who, not only followed M'Clure's track almost up to where he was frozen in, but was enabled to return by the route he had pursued in penetrating so far to the eastward, and again passing along the northern coast of this continent, and through Behring's Straits, reached the Pacific. He is now on his way to England. The results which have been observed in Russian America to attend northerly and southerly winds in winter, have been invariably experienced in certain portions of Siberia, only, instead of the former, which are the warmer winds of that season, being the more frequent there during that period, as is the case in Russian America, the latter, which traverse over an enormous extent of frozen soil, greatly prevail. This difference between the two countries in the prevailing winds of winter, is probably one of the causes which make so great a difference in their climate, Russian America at that season being considerably warmer than any part of Siberia.

Of the many large rivers which flow through Russian America, none of them have been explored to their sources; but several of them, such as the Colville, the Stikine, the Yukon or Kwichpack, and the Ksukokwin, are supposed to run a course of upwards of one thousand miles, and to be navigable for considerable distances. From

their breadth as well as their length, and the volume of water which they discharge into the sea, they may certainly be included among rivers of the first class. The Colville, which was discovered by Simpson and Deese since the convention of 1825, is two miles wide at its mouth in the Arctic Sea, where Captain McClure observed its influence twelve or fourteen miles out at sea, the water at that distance being of "a dirty mud colour, and scarcely salt." The Stikine enters the Pacific in 56° 50′ north latitude, where it is three miles wide, and at a distance of thirty miles from the sea, has a width of one mile; but its source is in the British territory. Of the Yukon or Kwichpack, Sir John Richardson says: "It rises to the west of the Rocky Mountains, not far from the union of the Francis and Lewis, which form the Pelly, flows first to the north, and after receiving a large tributary named the Porcupine, to the westward, falls into Behring's Sea;" and that "in 66° North latitude, and 147½° West longitude," which is about one thousand miles from its mouth, "it is one mile and a-quarter wide." These three magnificent rivers, falling into different seas, probably represent three distinct river systems of the north-west corner of this continent, each being fed by numerous smaller, yet considerable streams, and the three together, draining an extent of country much larger than the whole of Canada. The Rat River mentioned by Mr. Ibister, of the Hudson's Bay Company's service, in a communication to the Royal Geographical Society, flows from Russian America through the Rocky Mountains at the first complete break in the chain in 67° north latitude, into the Mackenzie of the British territory; the latter having, according to Sir John Richardson, a course of two thousand eight hundred miles (eight hundred longer than the St. Lawrence), and an unbroken navigation, fit for steamboats, from its entrance in the

Arctic Sea to the Portage of the Drowned, a distance of from twelve to thirteen hundred miles.

In addition to the Russian territory being every where drained by the finest rivers, it contains many large lakes, communicating with the former, and is indented with numerous deep and spacious harbours, and also by several extensive arms of the sea. Of the latter, Cook's Inlet, runs upward of two hundred miles into the land. These lakes and rivers, and these inlets and harbours, may be viewed as very important features of the country. They not only assist to temper the climate (the former by draining the land, which generally slopes towards the sea and towards the Mackenzie, and the latter by the salt atmosphere, which their waters diffuse through the interior); but they tend to enrich the soil upon their banks, by a short period of overflow in the spring ,and may be made to afford facilities for inter-communication, rendering accessible the most retired and most sheltered valleys, and for the establishment and active prosecution of an outward commerce. Traders already pursue a route from the neighbourhood of the Mackenzie, through the northern pass of the Rocky Mountains, by the north-west branch of the River of the Mountains, to Lynn Canal, situated a short distance above Sitka, between the entrance of which canal and their posts lower down, the Hudson's Bay Company have steamers running. The main land, as far as Cape Fairweather, is leased to that body by the Russian Fur Company.

Though little of the interior of Russian America has been thoroughly explored, yet, with the knowledge which we possess, that such rivers as the Colville, the Yukon, the Stikine, the Kuskokwin, the Rat and the Peel, and many other rivers of a large size, traverse it in every part, all of which are open for a considerable

period, and some of which, flowing into the Pacific, are never closed; that upon this continent the finest forests generally follow the direction of the rivers; that the soil must partake of the fertility usually found where numerous volcanoes exist, many being in action throughout the territory; and that it must contain many extensive valleys, completely sheltered from the coldest winds, by the several transverse ranges of mountains, such as the Blue Mountains the Copper Mountains, the Big Beaver Mountains, and the spurs from the Rocky Mountains, which diversify its surface, we should be led to believe that a great portion of Russian America is richer in resources and capabilities than it has hitherto been allowed to be, either by the English, who shamefully gave it up, or by the Russians, who cunningly obtained it. Since the period of its cession to the latter, the few accounts given of it, relate chiefly to portions along the coast, and along the British frontier near the Mackenzie; those accounts proceeding from recent British Arctic voyagers and travellers, and from the officers of the Russian and Hudson's Bay Fur Companies, who have occasionally penetrated its thick forests at various points, the former from the coast, the latter from the Hudson's Bay territory on the east. Viewed separately, these accounts are very incomplete, but upon an examination and a comparison of the whole of them, which the writer has attempted, they present a much more cheerful picture of the country, than that which has been drawn of it in encyclopœdias, and ordinary works upon the physical features of this continent, where the interior of this vast region is called a frozen waste, partly covered with inaccessible mountains, and partly with immense morasses. The writers in these works, in their inability, or in their want of industry, to learn what the country really is, have evidently,

upon the perusal of one or two accounts of the most unfavorable spots along the sea shore, where morasses have chanced to be found, as they are often found along the sea shore of many countries, applied the description of those spots to the whole territory. They have not even allowed for the possibility of the existence of any of those local advantages of soil and climate in portions of the interior yet unvisited, or unknown to them, which are invariably found in many parts of every extensive region possessing such diversity of surface as Russian America. *

Thus, from this dealing in generalities upon insufficient grounds, many fine countries have been long unjustly condemned and avoided. If fact, few general descriptions convey a correct impression of any country. It would, indeed, be very surprising if so vast a region as Russian America, which extends up to 71° north latitude, should

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* The following extracts from a paper, by Mr. Ibister, which appeared in the Journal of the Royal Geographical Society for 1845, give instances of the wonderful effects produced by certain local conditions upon soil and climate, even in parts of Russian America situated in the high latitudes of 66° and 67° North: "We proceeded from Fort Good Hope" [on the Mackenzie,] "to the upper part of the Rat River on the west of the Rocky Mountains, where a much finer country was observed. We had no sooner reached the bottom of the shelving valley than we found ourselves in an agreeable calm, while the temperature had to our sensations risen more than twenty degrees." "We ascended about thirty miles from the mouth of the Peel in sight of the Rocky Mountains. The character of the country had already entirely changed. The banks, though still low and alluvial, were strongly impregnated with dark, vegetable matter, and clothed with a dense vegetation of pines, poplars, and a thick underwood of different kinds of willow; and so sudden had been the transition from sterility to luxuriance, that we could scarcely believe that a few hours before we had been traveling through bleak unrelieved desolation. At the mouth of the river the vegetation is spare and scanty, but at a short distance, as soon as we reach the shelter of the mountains, it breaks out into a luxuriance unknown on the Mackenzie, in the same latitude. A white pine which we felled there measured seventy feet in length, and nine feet nine inches in circumference."

not contain large morasses, and present in many parts a scene of wide-spread desolation.* But what country of any extent is there, which did not, when in a state of nature, contain large morasses and desert tracts, and appear desolate in proportion to its solitude? What has been pronounced to be a desert upon the first view of a country, has been often found, upon further examination, to contain large tracts, exhibiting a varied surface of wooded mountains, fertile valleys and fine rivers; and such features a large portion of Russian America will be found to present. Even large portions of the steppes lying between Siberia and Thibet, which had always been represented as wholly barren and impassable, have been discovered by the Russians to be fertile and well watered, and altogether different to the ordinary steppes; and they have now established permanent posts of Cossacks, strengthened by field works and artillery, at certain intervals, extending one thousand miles across it, from Omsk towards the Thibetean frontier, in a direct line to India. Should the Russians entertain any designs against the latter country, it will be by this route that they will attempt to carry them out. The recent work of the French missionary, M. Huc, upon Tartary, shows how the Chinese have lately encroached upon the great desert of Gobi, and how they have turned every portion of it, upon which they have settled, into smiling gardens and fertile fields and meadows. But what were once considered as impassable deserts, will in future offer few obstacles to the traveller, the results of modern science and industry being made to supply those wants, which will enable us to provide against those dangers and difficulties, whether

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* In describing his course down the Mackenzie and along the shores of the Arctic Sea, not far from Russian America, Sir John Richardson says, "the boggy places were only seen on the sea coast."

of the elements, or of the features of the country, which have so often turned back the finest armies, since the period of Alexander's march across the deserts of Beloochistan to India. Science and industry, however, aided by enterprise, by civilization and Christianity, will do much more for the present and succeeding generations, than enabling large armies to cross what had been considered as impassable deserts. They will continue what the Chinese have begun, even without the aid of the latter: turn many portions of them into gardens and fields, through which the single traveller may journey in comfort and safety, and at every stage find a hamlet and a welcome. Our expectations of so much being within the possibility of accomplishment, may well be encouraged by what has been already effected throughout the steppes of Siberia. Perhaps the only desert tracts in which this could not be hoped for, are, what are called, the "barren grounds," upon the north-east coast of this continent, and the deserts of sand and perennial heat of Arabia and Africa.

Though a large portion of Russian America is neither a desert, nor the frozen waste, which many suppose it to be, science, enterprise and industry may be made to accomplish much there, provided it be no longer maintained merely as a preserve for wild animals; and once in the hands of England, it is to be hoped that it will be rescued from the fate, to which the immense region contiguous to it has been so long condemned, through having been left under the charge of an exclusive and unimproving body, such as the Hudson's Bay Company

In Russian America the northern limit of the forest extends along the parallel of 69°, while on the east of this continent it is confined to the 60th parallel, and in Siberia, with the exception of one or two favored locali-

ties in the west, to 65° north latitude. The relative value of these immense territories, so far as vegetation is regarded, may be estimated from a consideration of these facts alone. But the former can be shown to possess many other natural advantages over the other territories, in addition to possessing all those resources which give to the latter their chief value. Its existing trade to China, in furs alone, is very valuable, but to England that trade would become of still more importance, in her being able to make it one direct to Canton, and to the other ports of that empire to which she has access, instead of its being carried on, as at present, through the tedious and expensive route of Siberia, and the mart at Kiakhta. Some idea of the value of the fur trade of this region may be formed, from the fact that the Russian Fur Company maintain about sixty establishments among the islands along the coast, upon the main coast itself, and in the Fox, Aleuthian and Kurile Islands, which stretch across to the coast of Japan, and that the Tchukche of Siberia cross Behring's Straits to trade with the Esquimaux, and with the Russian posts recently planted in that quarter, for furs and for fossil ivory. These articles the Tchukche carry to the fair of Ostrownoie, situated on the Lesser Aniuy, accompanied by their women and children between which mart and the American coast, the journey occupies them nearly six months, so that they pass the greater part of the year upon the road. The Tchukche also trade with the large island of St. Lawrence, lying in the centre of Behring's Straits, and at Sledge and Ukiwok Islands, situated higher up. To facilitate the carrying on of this trade, the intelligent, enterprising and industrious Esquimaux have formed entrepôts at the latter islands, and, through their brethren on the main land, they distribute the Russian wares, obtained from the former, over

several hundred miles of American coast, and through seven or eight hundred into the interior, by the Yukon, and neighbouring rivers. Of these native traders, who, to a certain extent, act as such in defiance of the orders of the Russian Fur Company, Sir John Richardson says: "Sledge Island, as small as Ukiwok, is also inhabited by skilful traders, who are employed by the Tchukche as factors, to exchange the articles of Russian manufacture entrusted to them, for furs collected on the banks of the Kwichpack, Kuskokwin, and neighbouring rivers of America. The great variety of dialects which prevails in the Aleutian Archipelago, and neighbourhood of Behring's Straits, is most probably the result of the active commerce there carried on, having brought several nations into contact with each other." The enterprise of these independent native traders, which Von Bâer compares with that of the Phœnicians, has apparently begun to attract the attention of the British merchant; for, when recently cruising in that quarter, the commander of the Plover mentions, that, during his absence from Port Clarence, the British Schooner, Koh-i-noor, had arrived there on a trading voyage. In the far interior of the main land, several marts have been established, and are kept up by the natives, quite independently of the Russians, which are resorted to by many distant as well as by the neighbouring tribes. But all the natives of the north-west coast are skilful and enterprising traders. At Queen Charlotte's Island they not only dispose of furs and fish, but they cultivate potatoes, and hold, at stated periods, potato fairs, which are attended by the native traders from other islands, who again supply these, and other vegetable products, to the more remote traders inhabiting some of the rocky islands in Behring's Straits. How few persons there are in Canada, who have any idea of

the extent of busy commerce thus carried on in that remote corner of the American continent !

It has been partly for the purpose of checking the independent trade of the native tribes, which exists upon both sides of Behring's Straits, that the Russians have recently established permanent posts higher up than at Alexandrowsk in Bristol Bay, and at Cook's Inlet, where they have several factories, situated in about 59° and 60° north latitude; and there are also many upon the islands of Prince William's Sound. By one of Captain McClure's despatches to the Admiralty, it appears that the Russians have recently established a post upon the Colville River, near its entrance in the Arctic Sea. With the exception of Sitka, or New Archangel, the capital of the territory, and Kidiak, the former capital, and now the second place of importance, each of these posts are occupied by from fifty to three or four hundred persons, made up of Russians, of half-breeds and of native servants, including women and children; and they are generally protected by a blockhouse, or a stokade, with a few guns mounted. All the men are in the employ both of the Imperial Government and the Fur Company, the former being connected with the latter in its commercial transactions, and also in its organization as a military and naval power. The position of the company towards the Imperial Government in the latter respect, is somewhat similar to that which the East India Company holds towards the British Government.

Of the strength of the minor Russian posts throughout this quarter, a good impression is conveyed in the following account of one at Garden Island, belonging to the Aleutian group, taken from the journal of Sir Edward Belcher's voyage round the world, in 1837: "The establishment consists of an official resident, eight Russians

and fifty Aleutian and other allies. The houses are included in a substantial wooden quadrangle, furnished at its sea angles with two octagonal turrets, capped in the old English style, and pierced with loopholes and ports; the summits of the lines are armed with spikes of wood. The whole range is warmed by Dutch ovens, and the sides, being eighteen inches in thickness, are well calculated to withstand cold, as well as to defy musketry. The native allies live in houses outside. Portlock landed there in 1787, and called the port 'Port Etches.' At present the island is covered with pine trees, and a species of wild grain was noticed. Took on board spars and firewood. Port Etches might furnish a complete harbour."

Of Sitka, or New Archangel, the capital of Russian America, Sir Edward Belcher says: "The establishment of Sitka is situated on a flat broad delta, on the outer rocky peninsula of which the fortress which is now" [1837] "rebuilding, stands. It is about sixty feet above the sea level and completely commands all the anchorages in the immediate neighbourhood, as well as the peninsula. The inner line, which traverses the longest base of this delta, is protected by a heavy line of picketted logs, twenty-five feet in height, surmounted in *chevaux de frise*, and flanked at the angles, within musket shot of each other, by small blockhouse redoubts, loopholed and furnished with small guns and swivels. It extends from the sea in three fathoms, about one mile through the river. This cuts off all connection with the natives but through a portcullis door, admitting into a railed yard those bringing goods to market. This door is closely watched by two or three guards, who, upon the least noise or dispute in the market, drop the portcullis, and proceed summarily with the delinquents. The present very substantial house erecting

for the governor and his establishment, is about 140 feet long by 70 wide, of two good stories, with lofts, capped by a lighthouse in the centre of the roof. The summit of the light is 110 feet above the sea level, and commands a most extensive prospect. The building is of wood, solid, some of the logs measuring 76 and 80 feet in length, and squaring one foot. The roof is pitched, and covered with sheet-iron. When complete the fortifications of Sitka will comprise five sides, upon which forty pieces of cannon will be mounted, principally old ship guns, varying from twelve to twenty-four pounders. The bulwarks are of wood, and fitted similarly to the ports on the main deck of a frigate. The arsenal, which is immediately under on the low ground, is well stored with cordage of every description, and of very superior quality. The range of artificers is very complete, and specimens of their workmanship in every department, more than an arsenal generally boasts, attest very superior ability. The saw mills, which are worked by water, are about twenty miles distant half way down the south side of the sound, at *Les Sources*, or warm springs, which serves as a sort of Harrogate to the colony. Their most valuable wood is a very fine grained bright yellow cypress, of which they build boats, and export the plank in payment of debts contracted for supplies from the Sandwich Islands, principally China goods. They have a building slip, protected by a house, similar to those in our dockyards, The establishment comprises that of a ship of the line, one captain (the governor), one commander (lieutenant-governor), and lieutenants, masters, &c., according to the number of vessels employed. The total number is about 800, but of these many were invalids. Of course, many of their picked men were absent in their vessels, visiting the posts, and collecting the furs which were

daily expected to arrive. I witnessed comparative cleanliness and comfort, and much to admire, particularly in the school and hospital. The interior of their church is splendid, quite beyond conception in such a place as this. The whole establishment appears to be rapidly on the advance, and at no distant period we may hear of a trip to Norfolk Sound, through America, as little more than a summer excursion. On Sunday, all the officers of the establishment, civil and military, dine at the governor's; and during the week the military meet at the mess daily at one, re-assemble at 5 to take tea, and remain until supper at 10 or 11, during which interval cards or billiards occupy their time. I passed a most delightful evening at a dancing party at the governor's." Sir George Simpson, who visited Sitka in 1842, also speaks of the gaiety, as well as of the commercial activity of the place, "much of the time of its inhabitants being devoted to festivity; dinners and balls running a perpetual round, and being managed in a style which may be deemed extravagant." At one evening party which he attended, there were eighty persons present, "the ladies being showily attired in clear muslin dresses, with satin shoes, silk stockings, kid gloves, fans and all other necessary appendages, and the music and refreshments, including champaign, being excellent." Of the hot springs in the neighbourhood, Sir George Simpson says, he found the most luxuriant vegetation around them, and many rare species of the feathered tribe for so high a latitude, including the humming bird. Cook, however, found the humming bird at Prince William's Sound, in 60° and 61° north latitude, where numbers of that species get into the rigging and continually flew about his vessel. The former continues: "Altogether this is, indeed, a spot on which the senses may rest with pleasure, when wearied

with the savage monotony of the rocks and forests of the coast. The means of living are also abundant, the water being alive with fish and fowl, and the land teeming with deer and game." He gives a list of thirteen vessels he found at Sitka, simultaneously taking in cargo, and making preparations for their respective voyages, and states that "the bustle, in fact, was sufficient to have done credit to a third-rate sea port in the civilized world." With so many and such varied attractions at Sitka, and with the finest country in the route pointed out, well might Sir Edward Belcher look forward to the period, when a trip to Norfolk Sound, through America, would be regarded as a pleasant summer excursion.

According to Sir George Simpson, the trade of Sitka in 1842 was estimated at 10,000 fur seals, 1,000 sea-otters, 12,000 beavers, 2,500 land otters, and 20,000 sea-horse teeth, besides foxes and martens, and the produce of its salmon, sturgeon and turbot fisheries, and of the neighboring forests. The valuable furs of the sable and ermine, and of other animals, are also obtained in the territory, but are exported from other posts situated further north; Sitka, Kodiak, &c., each being the chief depôt of a district, whence is exported the produce collected at the neighboring minor posts. Cook obtained along the coast many valuable skins, including several descriptions of ermine, and a beautiful skin of some unknown animal; and Lutké, in the journal of his voyage round the world, states,, that, in 1808, as many as 800,000 skins of the ursine seal alone, were accumulated at Unalaska, one of the principal depôts of the Russian Fur Company among the Aleutian Islands. McClure mentions the valuable silver fox skins, which he saw in the possession of the Esquimaux upon the Arctic coast of the territory, and the quantity of furs, which others informed him they would procure from

the interior, if he would wait for them. He also alludes to the number of whales, which he fell in with along that coast, and to the number of walrusses he saw near Icy Cape, where, he says, "the hundreds of walruses that were lying upon the ice, thickly huddled together like sheep in a fold, were most astonishing." The northern coast he found to be inhabited throughout by a kind and merry race, apparently well to do, of whom he speaks in the highest terms; and the country appeared to him to be well stocked with reindeer, and other animals of the chase. Captain Beechey, who was off the north-west coast in 1826, says, that "at Kotzebue Sound the articles the native brought off, were skins of the seal, of the Arctic fox, the common musk rat, the marten, the beaver, three varieties of ermine (one white, one with a light brown back, and yellow belly, and the third with a grey back, spotted white and yellow), also the American otter, the white hare, the polar bear, the wolf, the deer and the badger. Their fish were salmon and herrings, and they had also some ingeniously cut ivory figures, some iron pyrites, plumbago and red ochre."

Profitable as the fur trade in this quarter has already been, there is a certain prospect of its value becoming greatly enhanced, by the opening to general commerce of the markets of Japan. In those wealthy and densely populated islands, where the temperature of winter ranges almost as low as it does in the north of China, direct and, comparatively, near markets for the furs, the fish, and probably for the timber of Russian America, will ere long be opened out, the importance of which to the latter country it is impossible to over-rate. Probably those highly cultivated islands will be found to be so cleared of their forests, that they will afford the most lucrative markets for the valuable timber of Russian America and the

Oregon territory. In a large portion of China timber has already become very scarce. Mr. Earl, in his work upon the "Eastern Seas," says, that timber has become so dear in China, that the junks of the Chinese are generally built in other countries where wood is plentiful. There can, therefore, be no question of the profit of establishing a trade between that country and the north-west coast, in this staple production of the latter. The greater portion of the south of Persia, which is wholly barren in timber, and a great part of South America, which is equally so, might also afford excellent markets for the useful timber of the north-west coast. Sir Edward Belcher and many others describe the pine trees in the Oregon territory to be from two hundred and fifty to three hundred feet in height, and from twenty to forty feet in circumference; while Sir George Simpson speaks of having seen trees near the Columbia River, from three to four hundred feet high. The latter must be about the largest trees in the world.

But Russian America possesses, in its minerals and ores, far greater riches than its furs or its fisheries, or even its forests can ever be made to yield, the turning to account of which, would give life to the whole region, and tend to raise up villages and towns throughout it, as prosperous as these, which have sprung into existence, in the mining, yet far more inhospitable districts of Siberia; many of them upon rivers whose outlets being in the Frozen Ocean, in a higher latitude than the northern shores of this continent, are unsealed but for the shortest period, between the discharge of the accumulated ice of one winter, and the rapidly forming ice of another. From the time of the earliest explorations of the north-western portions of this continent, to the more recent visits of Franklin, Breechy, Lutké, the younger

Simpson, Richardson and McClure, the finest coal, and the purest copper, have been found along the Mackenzie, from the mouth of that river to Point Barrow and Icy Cape, and thence down to Sitka and Vancouver's Island, the presence of the one giving double value to that of the other; and the writer has little doubt, from the results of comparisons which he has made between the geological features of the two countries, that the whole region is as rich in other minerals and ores as Siberia: that, upon a proper exploration, gold will be found in its rivers and valleys, and platinum, lead, silver, diamonds, and all the other precious stones of Siberia in its mountains. Several valuable minerals, such as fine jasper, porcelain clay, semi-opal, plumbago, gypsum, various coloured ochres, amber, sulphur, petrolium, galena, prophyry, variegated marble, and also iron ore, have been already discovered in many parts of the territory. At Prince William's Sound, Cook saw some substance in the possession of the natives, which he supposed to be cinnabar. It is therefore not unreasonable to look forward to the discovery of rich quicksilver mines in that quarter, the value of which would increase in proportion to the abundance of other ores and minerals, which may be found there, requiring the use of quicksilver in their extraction. At Queen Charlotte's Island, belonging to England, but situated a very short distance below the Russian possessions, quantities of gold have been discovered by Europeans from the main shores of Oregon and California, in the operations of extracting which, they were much obstructed by the warlike, but intelligent and commercial natives of the island. In speaking of the mineral riches of the country contiguous to Russian America, and reaching to the north-west boundry of Canada, Sir John Richardson says: "It would be true economy in the Hudson's Bay Compa

who are the virtual sovereigns of the vast territory which spreads northwards from Lake Superior, to ascertain without delay the mineral treasures it contains. I have little doubt of many of the accessible districts abounding in metallic wealth of far greater value than all the returns which the fur trade can ever yield." While this may be well said of the territory occupied by the Hudson's Bay Company, Russian America may be stated to present even greater indications than the former of the presence of gold and precious stones. Much of the Russian territory contains primitive rocks, disturbed by volcanic action, which indicate great mineral riches, as a similar formation, disturbed by the same agency, in the Alti Mountains, and the country of Lake Baikal has, according to Erman, been found to contain, in immense quantities, some of the richest mineral productions of Siberia. The numerous hot springs, which exist throughout the territory, also indicate the presence of metallic wealth. The mountains along the coast of Russian America are probably a continuation of the vast chain, running along the west coast of this continent through Chili, Peru, Mexico, and California, and they are no doubt continued by one branch through the Peninsula of Alaska, the Aleutian and Kurile Islands, all of which are rich in minerals, to the islands of Japan, which abound in the precious metals and gems; proceeding through which, they pass on to Formosa and the Philipine Islands, and terminate in New Guinea, or perhaps in Australia; while the main branch, with two or three intervals in the highest latitudes, proceeds up to Icy Cape, and is continued to the same quarter, from the western side of Behring's Straits, by the vast ranges of the Yablonni (lately found to be the richest in minerals in the world), and the Alti Mountains of Siberia, the Thian-chan and the Kuenlun

of Thibet, the Himalaya of India, and the mountains of Burmah, Siam, Sumatra and Borneo. Thus a complete arc may be traced upon the surface of the earth, extending over half the globe, presenting similar features, and containing similar treasures.

In regard to facilities for the profitable working of its mines: for the raising, preparing and transporting of its ores and minerals, Russian America possesses many advantages over Siberia. Some of these consist in its fifteen hundred miles of coast being accessible to the largest vessels for a great part of the year, and a large extent of it for the entire winter, while the whole of the coast is tapped, as has been already shown , by many large and navigable rivers; from the banks of which the produce of the mines collected upon them may be carried to any part of the world, instead of the greater portion having to be conveyed, as in Siberia, a distance of several thousand miles by land carriage and by difficult river navigation, before it can obtain a market, or reach a place of shipment. Another advantage, which the former country possesses over many portions of the latter, in respect to mining operations, consists in its abounding in all parts with coal and wood. In "Taylor's Statistics of Coal" it is stated that in the district of Tobolsk which is very rich in the precious metals, the want both of firewood and coal is a great impediment to the smelting of the metallic ores, and prevents the increase of the annual produce of the mines; and at Barnaouil, which is the chief depôt in Siberia for the gold found east of the Ural, the forests in the vicinity are much despoiled of their timber, in consequence of the immense quantities of wood required there for the furnaces. Eighty thousand cubic fathoms of wood, besides an immense quantity of coal, are annually burned at these works, which comprise

one hundred and fifteen smelting furnaces, twelve large open hearths, twelve refining furnaces, five furnaces for copper, and fourteen calcining ovens. These, and similar works at other places, and the establishments at the various mines, as well as the transport of ores and minerals, and of supplies, &c., give employment to many thousand persons, including free Russians from the mother-country, Russians and other Europeans born in Siberia, who are generally the descendants of military immigrants, of exiles and convicts; present exiles, and convicts undergoing their several punishments, and also the aborigines of the country. The mines of the Ural, in the transport of minerals alone, give employment to twenty thousand persons, and Cottrell says that "ten thousand horses are employed every year in conveying the provisions of corn, brandy, and marine stores to Okhotsk, which is a great source of subsistence to the people." The mines, generally throughout the country, are worked during winter and summer. Although it would be some time before the same amount of labor, as Siberia commands, would be available for similar occupations in Russian America, still the latter would not be so disadvantageously placed in this respect, as, upon a first glance at the two countries, might naturally be supposed. Though Russian America does not usually countain more than some two or three thousand Europeans, including the military, it numbers many populous tribes of natives, who, with the entreprise and the industry of the most enterprising of the Siberian tribes, possess greater intelligence and more powerful frames than the latter. Their natural inclination, and aptitude for settled and steady employments, would, under proper supervision and encouragement, render them capable of being instructed in all the pursuits of civilized life. They might thus become the

most valuable addition to the population of any empire. They are now employed to a certain extent by the Russians, but were proper attempts made to develop the most valuable resources of the country, they might, under a kind and a judicious treatment, which they do not at present receive, and proper instruction, be employed to a much greater extent, most beneficially to them and to the country. Of the natives generally of the north-west coast, Dr. Scouler, who has lived among them, says: "The north-west Indians, especially the coast tribes, have made considerable progress in the rude arts of savage life. Their canoes are constructed with much skill, their houses, being for permanent residence, are erected with some forethought and attention to comfort, and their fishing apparatus and articles of domestic economy are far more numerous and elaborate than can be found in the temporary lodge of hunting tribes. From this settled mode of life they are more accustomed to continuous labors, and even show considerable aptitude for passing into an agricultural state." Of some of the tribes nearly all the men are six feet or upwards in height, and are well made in proportion; while, according to Dixon and other voyagers, the people of one tribe on the coast are as white as Europeans, and have handsome features with florid complexions. Marchand also speaks of the large-eyed, fair-skinned natives of the north-west coast of America, living in 54° and 58° north latitude, whom Humboldt supposes to be descended from the Usuns, an Alano-Gothic race of Central Asia. Above the Oregon territory and Vancouver's Island, the barbarous custom of flattening the head in infancy does not prevail.

While every indication exists in Russian America of its abounding with mineral riches to an extent exceeded by few countries in the world, there is a prospect of its

being found to be as inexhaustible in mammoth ivory as Siberia, where the search for, and the trade in that article gives employment to several thousand persons. Though in the latter country large quantities of this valuable fossil ivory have been obtained every year for the last century or more, it does not appear to become exhausted to the slightest extent, but, on the contrary, the thaw of each succeeding summer seems to lay bare a greater supply that had been yielded before. At Eschscholtz Bay, and at other parts of the coast of Russian America, upon Behring's Straits, Captain Beechey discovered many remains of the mammoth, and of other quadrupeds, imbedded in the cliffs; and, from the earliest period, the natives of that coast have been observed to have quantities of ivory in their possession. Taught only by their own natural ingenuity and industry, they have already become most skilful workers of this valuable article of commerce. To persons upon the spot, the obtaining of this ivory might become as remunerative a pursuit as that of the ivory seekers in Siberia. It would certainly be a more profitable occupation than that of hunting elephants for their ivory, by parties in the far interior of Africa.

Allusion has already been made to the number of whales and walruses which have been seen upon the Arctic coast of Russian America. Cook, and others, encountered as many off its coast upon the Pacific. The territory, including the Aleutian and Kurile Islands, comprises nearly all the best whaling stations of the North Pacific; the possession of which, to a maritime nation like England, having already an immense extent of coast in the South Pacific, would become fifty times as important as it is to Russia. Besides obtaining a great number of magnificent harbours, and virtually making a British sea of a great portion of the North Pacific, which may

now be regarded as Russian waters, the possession by Great Britain of those stations, and of the Bonin Islands, (admirably situated upon the south-east coast of Japan, and which, of right, belong to England), would assist the carrying out of that which has long been a great national object with our statesmen; namely, a large and progressive extension of the British whale fishery. The harbours at Sitka, Queen Charlotte's Island. Vancouver's Island, and the entrance of Frazer's River, are peculiarly adapted for the fitting out of whalers, being in the neighbourhood of very valuable fishing grounds, and the country in their vicinity affording everything that is required for the construction of vessels, such as: excellent timber, iron and copper, coal for forges, water power for driving saw mills, and even flax, growing wild in the interior, for the manufacture of sails and cordage. Thus the whale fishery alone, by creating a demand for many articles into which these products could be manufactured, might be made to give employment to numbers of persons of various trades and callings. All the natives of the coast of Russian America, and of the Aleutian and Kurile Islands make excellent sailors, and, of their own accord chase and capture the whale. They could, therefore be most usefully employed in whalers, cruising either in the North or South Pacific, and also in craft engaged in the other fisheries; a certain proportion of the crew of each vessel being made up from among them. In addition to cod, herrings, turbot, halibut, and the delicious soles of Europe, are found in immense quantities along the coasts of the main land, and of the islands, and salmon and sturgeon at the entrances of and up the rivers. Even the rivulets in the Aleutian Islands [illegible]d with salmon and salmon-trout. From the [illegible]stur[illegible] isinglass, and the celebrated caviar [illegible]

longer procurable from that country, could be made. For the latter article there is a large demand throughout the countries of the Mediteranean, the Black and the Baltic Seas.

For the support of those engaged in the mines and fisheries, and also in the cutting and transport of timber, it is very important to be able to command large supplies of cattle and sheep. These supplies, besides being furnished by the British territory situated to the south of Russian America, could be easily raised in many spots throughout the latter, as well as upon the Aleutian Islands, where the pastures are very rich and the climate is very mild. Cook was of opinion that upon some of these islands "cattle might subsist all the year round without being housed." Among the wild animals in the territory, which might be made to supply food to a considerable extent, are the mountain sheep and goats in the south, the reindeer in many parts, as they migrate, according to the season, from one part to another, and the less tender musk-ox in the far north. The reindeer might be tamed to run in harness, as they are in Lapland and in the north of Siberia. The Ostyaks of Beresov, in the latter country, also raise herds of reindeer, for their venison, which they consume themselves, or sell to the Russians.

In the event of the territory coming under the dominion of England, the Russians now there might be permitted either to remain in it, or to retire to their own country. Some of those, who should decide upon the former course, might be continued in employments similar to those which they now fill; while others, who had served in Siberia, might be encouraged to introduce many of the manufactures and handicrafts of that country. With the skill of the latter, and with that of competent persons from

England, and the rude, but daily improving labor of the natives of the country, we might then look forward to the early springing into existence of all the industrial pursuits of the former country; from the preparation of furs and hides, and the making of salt and soap, to the manufacture of carpets and cloths, of iron and copper plates and machinery, of fire arms and sword blades, of porcelain ware and malachite vases, and to the most refined branches of the lapidary's art. That Russia has not put forth the efforts to colonize her dominions in America, which she has so successfully made in Siberia, must be attributed to her having long looked forward to a rupture at some period with those powers, who are most interested in opposing her aggressions, and who at any moment would be able to cut her off from the territory by a powerful fleet. Hence she has not used the same means and the same diligence to explore the country, to make known and develop its more important and more permanent resources, to lay out roads and found cities, or to invite or transport a population there.

Considering the recommendations which the writer intends to offer, in regard to Russian America and the adjoining territories, much might be added here upon the British portion of the Oregon territory, and the country lying between it and Canada; but, although the latter have hitherto been but little appreciated, they are better known than the country which forms the chief subject of this memoir. He will, therefore, content himself with taking notice of some few of their principal features and resources, before proceeding to bring forward certain suggestions, as to their future relations, both to Canada and Russian America.

Including the northern shores of Lakes Huron and Superior, which are fast becoming occupied by the miner and the lumberer, and which, in many parts, invite the agriculturalist and the trader, Canada extends one-third of the distance across the continent. Beyond Lake Superior a country, as valuable in natural resources as any part of Canada, exists, within the British boundary, the whole way to the Pacific, containing, at a distance of about seven hundred miles from the lake, the fine agricultural settlement of Red River (which covers a space of fifty miles, and supports a population of ten thousand souls), and having numerous posts of the Hudson's Bay Company at certain intervals along it, some of which are situated upon the banks of lakes and rivers navigable for several hundred miles. Among the latter the Saskatchewan is navigable for upwards of one thousand miles. Sir John Richardson, Sir George Simpson, and all who have travelled that way, speak of the capabilities of the country for colonization, from Lake Superior to Lake Winnipeg, and from the latter, through the magnificent valley of the Saskatchewan, to the foot of the Rocky Mountains; where, in several parts, the oak, the elm, the ash, the beech, the maple and the vine grow in great vigour and luxuriance, few of which are found so far north in Canada; and where, at many of the posts, both maize and wheat are profitably cultivated. At Red River settlement the latter yields forty-fold. At Cumberland House, where both are grown, and which is situated in 53° 57′ north latitude, at a height of 900 feet above the level of the sea, Sir John Richardson says the summer heat exceeds that of Brussels or Paris; and of another spot in the same neighbourhood Captain Back says: "On the River Saskatchewan I was surprised and pleased to behold a large farm-house, with barns, and fenced enclo-

sures, amidst which were grazing eight or ten fine cows and three or four horses, the property of a discharged servant of the Hudson's Bay Company." This spot is situated about the centre of the continent, where, at one period, a vast desert was supposed to exist, stretching from the Athabasca River to the Missouri. When so much can be said of the country around Cumberland House, which lies about three hundred miles north of the American boundary, we may judge of the capabilities of the belt of land comprised in the Saskatchewan valley, and extending between the 49th and 54th parallels, within the British territory, for a distance of about 1,500 miles across the continent. Speaking of one portion of this beautiful valley, from Bow River to Carlton House on the Saskatchewan, Sir George Simpson says that they passed through a country very much resembling an English park. Sir Alexander Mackenzie pursued a more northern course by the Peace River than this, in his journey to the Pacific in 1793, yet he passed through a magnificent country most of the way. Where he wintered upon the east side of the Rocky Mountains, in 56° 9′ north latitude, there was little snow, and "the birds, which were much like robins, remained there, and sang, during the whole of the winter." "In the sheltered valleys of the Rocky Mountains," in about the same parallel, Sir John Richardson says, "certain trees are found in latitudes three and four degrees further north than they are found in other places." After crossing the Rocky Mountains by the former route, near the sources of the Saskatchewan and of several rivers, including branches of the Columbia, flowing to the Pacific, the British portion of the Oregon territory is reached, much of which is comprised in what is called New Caledonia. Of this country, which adjoins Russian America, a recent accounts says:

"New Caledonia is in extent, from north to south, about 500 miles, and from east to west 300 miles. It is described as very beautiful, abounding in fine forests, rivers, and magnificent lakes, one of which, 300 miles round, is surrounded by picturesque mountains clothed to their very summits with timber trees of the largest dimensions. From this lake a river falls to the west into the Pacific, and swarms with salmon." Frazer's River, which runs through this region for a distance of 350 miles, is navigable for vessels drawing twelve feet water, for ninety miles from its mouth, where it falls into the Pacific in 49° 7′, north latitude. Once upon the west side of the Rocky Mountains a still milder climate is observed, even in a much higher latitude than the valley of the Saskatchewan. Mr. Anderson, of the Hudson's Bay Company's service, who has resided for a considerable period in New Caledonia, says, in a communication to the Royal Geographical Society, that, although in a pretty high latitude, it shares, in common with all positions on the west side of the Rocky Mountains, perfect immunity from protracted cold. Sir John Richardson also states that he learnt from Mr. McPherson, belonging to the same service, that good crops of wheat were raised with facility at Fort George on Frazer's River, in about 54° north latitude, and at a height of about 500 feet above the level of the sea. The big horn sheep are very numerous in the mountains of this region, and are as good eating as the domestic sheep; while the prairie country of the Saskatchewan is roamed over by countless herds of the buffalo, also by the reindeer and the beautiful antelope. The British coast of the Oregon territory, like the adjoining coast belonging to Russia, contains many splendid harbours and sounds; upon some of which we may look forward to the planting and rapid growth of

settlements, and to the rise of flourishing commercial cities, carrying on varied transactions with all the magnificent countries and fertile islands of the Pacific, and drawing wealth from the trade of Europe as well as from that of Asia and America. This view of the future in that quarter will appear far from being an extravagant one, if we take into consideration the facilities offered by the line of country above glanced at, for the construction of a railway from Lake Superior to the Pacific, and we also reflect upon the occurrence of events, which will probably arouse, both England and Canada, to the importance of connecting the Atlantic with the Pacific by railway through British territory. Among the events which should hasten the accomplishment of this work by England and Canada, may be mentioned the stealthy advancement of Russia on the Pacific in the direction of China, the progress of the United States in California, the opening of the trade of Japan, the extension of French dominion over the most valuable islands of the South Pacific, and the rapid advancement in population and wealth of Australia and New Zealand. Any railway to connect the two oceans, supported by England and Canada, should run through the Saskatchewan valley, and should terminate at one of the fine harbours, also in the British territory, upon Fuca Straits, opposite to Vancouver's Island. The railways and water communications of Canada already extend one third of the distance across the continent, and pass through a generally settled country. Though fifty times of more importance to the province and to the whole empire, than all the various and, in some instances, competing railways now in course of construction in Canada, this line to the Pacific would neither be so costly, nor so formidable an undertaking as the completion of the former. By the granting of a moderate quantity of land at each of the

stations along the route, to any company that would construct the road, such a body would easily be formed for the purpose; and a work would ere long be accomplished, with little expense to the Imperial or Provincial Governments, which, in the extent of valuable country it would render accessible for settlement, in the minerals and other riches, which it would develop, as a means of giving employment to tens of thousands, and in the commerce, which it would attract, as well as create, would yield more wealth to the province, than the imagination can picture, as representing all the riches of the Indies. Upon the line of route, too, a coal field exists 400 miles wide. Yet parties in Canada have actually set a project upon foot, for connecting the main provincial line of railways running westward, with a proposed line along the south shore of Lake Superior* and the Missouri

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* Although the country on the north of Lake Superior, in the immediate vicinity of the shore, is not favorable for the construction of a railway, yet further back from the lake it is much better adapted for the purpose; where also it contains good timber and some excellent soil. Its value in the latter respects has been particularly observed along the banks of the rivers extending towards what is generally supposed to be the height of land running between Canada and the Hudson's Bay Territory. This height of land, however, is not continuous, but is penetrated by some of these rivers in several places; as it is also divided further to the west by numerous water courses in all directions between Lakes Winnipeg and Superior. As the Hudson's Bay Company base their right to cut Canada off from the magnificent Saskatchewan valley, and the valuable country extending to within about one hundred miles of Lake Superior, upon the assumed fact that such water communication between the St. Lawrence and Lake Winnipeg do not exist, and as much of the country in that direction has been but imperfectly explored, it would be well for the Canada Government to institute a thorough survey of the country for some distance, lying north and south of the route usually pursued between Lake Superior and Lake Winnipeg. The present prospects in that quarter may well justify incurring the expense of such a survey; for, now that Lake Superior has been connected with Lake Huron by a ship canal (which completes an unrivalled ship navigation, extending into the continent a distance of two thousand miles from the ocean), the former lake will be soon covered with steam and sailing craft of every description, and the country beyond it to the west, as well as the country upon both sides of it, will become greatly enhanced in value.

valley, through the United States territory the whole way to the Pacific, terminating at the mouth of the Columbia, about 200 miles south of the British boundary, after passing through a more difficult country than is found on the former route; one, moreover, subject to fevers and agues, and through a much more difficult pass in the Rocky Mountains (3,000 feet higher), than the passes within our own territory. But, while these parties have thus entirely overlooked the advantages of the route through British territory, which should weigh well with all Canadians, the people of St. Paul, the capital of Minnesota, who are situated much nearer to the southern than to the northern route, have been confidently resting their hopes of the advancement of their town, upon the prospect of the railway to the Pacific being constructed through the British territory, and of their running a branch line due north to it of 400 miles long! They perceive that if it be taken in hand, before the people of the United States shall have decided upon any one of the inferior and contending routes through the latter country, it will be carried out, and that the line of it will probably be found the best route for the traffic of the United States with the Pacific, as well as for that between England and the East. Speaking of the British route, they urge, among other advantages, that "a very large part of the country upon it is the finest wheat country in the world." What, then, can be a greater proof of the superiority of the latter, for the construction and for the successful working of the road, than this opinion in its favor, and these hopes, based upon its completion, of persons residing in a foreign country, at a place situated 400 miles south of the British boundary, who are also well acquainted with the capabilities of the various proposed routes!

Having given a sketch of Russian America, and of the country lying between it and Canada, the writer will now state the views which he has been led to entertain in regard to the former, from the knowledge he has acquired of their value, and from observing the opportunity, which the present war with Russia affords, for carrying those views into effect.

To reduce the resources and to humble the pride of Russia, it is advisable that she should be deprived of all detached possessions from which she derives wealth or power, and which may present vulnerable points of attack. Where operations for the accomplishment of these ends can be undertaken upon this continent, the people of Canada become especially interested, and they may well invite and offer to assist these operations by every means in their power. That the nine hundred thousand square miles of territory, belonging to Russia upon this continent, not only contributes to her commerce and her naval resources, but that it may be made to yield very considerable wealth, from its minerals, its forests and its fisheries, the writer trusts has been shown in the foregoing. He now proposes to point out how Canada might become vastly benefited by the capture of the territory by Great Britain, and how she might, by assisting to effect that capture, gratify the general feeling of sympathy with England in the present contest against Russia, which has been so warmly expressed throughout the province.

Within the past few months the news has been received of the unsuccesful attack made by the British and French fleets upon Petropaulovski in Kamtschatka. The last account we had of the allied fleets was, that the French fleet was at San Francisco and the English at Vancouver's Island, at which places each had put in to repair damages, and probably to winter. Considering their

reduced strength after the loss at Petropaulovski, the experience, which they gained there, of the uselessness of attacking posts of great strength, without an overwhelming sea force, or the co-operation of a powerful land force, and considering the season of the year when they were last heard from, there is little prospect of the allied fleets proceeding before the coming summer (when they may be strengthened by a few ships lately ordered to the Pacific from England), to attack Sitka and Kodiak, both of which, by nature as well as by art, are much stronger than Petropaulovski, where the fleets have failed to make any permanent impression. Of the defences of Sitka a description, taken from Sir Edward Belcher's account of that place, has been already given; but, since his visit there, they have been considerably increased, as also have the defences of the other posts throughout the territory. Within the last eighteen months the Russians have availed themselves of their possession of the mouth of the magnificent River Amoor (which they have obtained by taking advantage of the present troubles in China), to transport a large number of heavy guns, and an immense quantity of other munitions of war, from the interior of Siberia to the Pacific, and thence to their posts in America. By this new seizure of territory from China, and the consequent acquisition of the entire navigation of the Amoor, upon which they have already placed several steamboats, the Russians have been able to secure a splendid naval harbour, and to establish a depôt of warlike and other supplies, upon the western shores of the Pacific, in a climate which admits of a navigation during the whole winter, within reach of the great arsenals and manufactories of Siberia, and of the great line of communication running through the latter to the west, and therefore of the whole resources of the empire.

and also of their possessions in America: by which the latter have become of far more importance to them, and far more formidable to their enemies. Until England and France shall maintain a sufficiently numerous fleet in the Pacific, to capture or blockade the coast of Russian America, or to capture the new Sebastopol, which is fast rising in offensive, as well as in defensive strength at the mouth of the Armoor, the latter will constitute the most powerful support and reserve to the former; and, with the fine timber in its neighbourhood, and the iron and cordage of Siberia close at hand, the Russians will be able to build and send forth powerful fleets, that might keep in dread the entire seaboard of our Indian and Australian possessions, or, passing on at any favorable moment, make a diversion in Europe. How important, then, is it to the interests of the British Empire, if not to the future peace of the world, that Russia should be deprived of this new acquisition in the infancy of its rise to military importance, as well as of its posts upon this continent, during the present war! Among the latter, the town of St. Paul, upon the Island of Kodiak, near Cook's Inlet, takes the second place to Sitka. It is situated upon a safe and spacious harbour, and is strongly fortified. Of its works a recent account says: "The town is defended by two citadels, mounting more than 100 cannon, and up to the present time no foreign vessel has succeeded in obtaining communication with it. The passage in the harbour is only practicable under the cannon of the Fort of St. Paul; which some years ago was garrisoned by 400 men, and mounted 40 guns. Like Sitka, a few small vessels, carrying four or five guns each, guard the coast approaches." With a number of such works as these at Kodiak, Sitka, and at other places along the coast, to be captured and occupied, the attacking force should consist of some-

thing more than the few vessels which at present compose the allied fleets in the North Pacific.

Now, as Canada, in her rapid progress in population and wealth, and in the spreading out of her people to the north and to the west, will naturally become ambitious to extend the province, or to see new provinces in alliance with her, extended over the rest of this continent, lying north of the United States, she might well undertake to furnish the land forces required to act with our fleet against Russian America, and also for remaining in the country as permanent garrisons at Sitka, and the other important posts along the coast and in the neighbouring islands; a step for which many precedents can be found in the conduct of the gallant and generous colonists of New England, and the neighbouring provinces and plantations, during the French and Spanish wars of the seventeenth and eighteenth centuries. For this service England might make Russian America a dependency of Canada, as at one period Nova Scotia (after her first capture from the French in 1690), was attached to, and was garrisoned by troops in the pay of our then province of Massachusetts Bay. She might, at the same time, extend the western boundary of Canada (which is now supposed to be situated at one of the sources of the St. Lawrence, one hundred and eighteen miles beyond Lake Superior), as far as the southern portions of Russian America, taking in, within the magnificent belt of country thus proposed to be granted, the Red River settlement, also the fertile valleys of the Saskatchewan and the Missinipi (running almost parallel with each other, and being divided by the slightest ridge), and the whole of the British portions of the Oregon territory. Thus Canada would be magnificently rewarded for the proposed service, and a vast region, rich beyond conception in natural

resources, become rescued from continuing as a mere preserve for wild animals. As to the rights of the Hudson's Bay Company to the Oregon territory, and the country lying between Canada and Russian America, those rights consist only in the company having a license to hunt and trade there, which will expire in 1859, and which gives them no territorial claim whatever. There could, therefore, arise little difficulty from that quarter to the proposed arrangement between England and Canada. Under any circumstances, it is to be expected that the latter will make every effort to prevent the company from obtaining a renewal of that licence, and that it will also endeavour to procure the removal of their blighting influence over that other portion of this continent, as large as the whole of Europe, which they claim under an ambiguous charter from Charles the Second. A measure, which may have been reasonable and proper in the time of that monarch, may have become quite the reverse at the present time; and, in that case, should be swept away, as many other relics of a less enlightened period have been, by an act of the Imperial Parliament. Such a course might now well be adopted towards the pretensions of the Hudson's Bay Company over an immense region, possessing resources far more important than those which give employment to a few fur hunters and traders, whose exertions do not bring the slightest good to England, or to the country in which they are made, and which neither enrich nor benefit a single human being, beyond the few who compose the stockholders of a close and pernicious monopoly. Of course, in the event of the desirable change advocated, being brought about, the company should receive a fair remuneration for the capital of *L*400,000, which they profess to have invested in this region. They

would find the important province of Canada a very different opponent to deal with, than they have hitherto experienced in the unprotected colonists of the Red River settlement, who, for many years, have been appealing in vain to the Home Government against the oppressive rule of the company. Though the natural outlet of the settlement is through a fine country to Canada, the route formerly pursued by the French traders and the servants of the North West Company, and still containing many remains of their forts and gardens, the Hudson's Bay Company, in dread of all contact with the enterprise of Canada, compel the colonist to make use of the inhospitable route to Hudson's Bay, and the two ships which annually visit the company's factory there from England. But all this would be soon remedied were Canada to become the direct and openly avowed opponent of the company. Considering that the greater number of the ten thousand souls at Red Rivers are agriculturalists, and that excellent markets for their produce could be obtained among the mines at Lake Superior, which are now supplied by the country lying upon Lakes Erie and Ontario, an immediate and a very important object would be gained, both to the province and to the Red River settlement, by the opening out of a communication between the latter place of supply and the former places of consumption. It would give new life and new energy to the whole of that settlement; a fine country and a desirable population of ten thousand souls would be at once obtained by Canada, and the traffic created between the settlement and the province, would, of itself, give rise, first, to the establishment of small posts and villages, and, afterwards, of large agricultural and mining settlements (the one sustaining the other), at the most favourable localities for each between Lake Winnipeg and Lake Superior; certain portions of which route are

described by Sir John Richardson, and others, to be as rich in mineral as in agricultural resources. As the highest prices are obtained in the United States, and in Eastern Canada and Europe, for agricultural produce, it would be much better for the large mining population of Lake Superior, to be supplied by the country still further to the west, which cannot send its produce to the former markets, than that they should be supplied by the country to their east, which has already access to those markets. Under the reciprocity treaty with the United States, the rich agricultural country situated in the former direction, in the neighbourhood of the lake, might also be made to furnish food to the large mining population along the southern shore of Lake Superior, where provisions are now obtained from the country lying upon Lake Michigan.

Should the British Government regard the several regions under consideration, as too extended to place under Canada as a part of the province, they might be formed into three provinces; the Red River settlement being the head quarters of one, reaching from Canada to the Rocky Mountains, and having a breadth of about five hundred miles, and which, being bounded in the north by the height of land called Portage La Loche, where the Mackenzie takes its rise, would embrace the whole of the Missinipi and Saskatchewan valleys; the second commencing on the eastern side of the Rocky Mountains and taking in all of the Oregon territory which belongs to England, and the third to consist of the whole of Russian America. Or Canada might be extended to the head waters of the Saskatchewan in the Rocky Mountains, (which would embrace a country to which she has already a claim), and the Oregon and Russian America be formed into two provinces beyond. Vancouver's Island, which is

destined to become the England of the North Pacific, should be made another province, with the large gold-bearing island of Queen Charlotte attached to it as a dependency. For any settlements upon these islands to make any progress they must be taken entirely out of the hands of the Hudson's Bay Company, whose interests as a fur company, are diametrically opposed to all extensive or progressive settlement in the regions under their sway. The settlers at Vancouver's Island are already protesting against the rule of the company, which rests as a blight upon all their efforts; and, as the lease of the island to that body is about to expire, it is to be hoped that the British Government will not be induced to renew it: that the momentous events occurring in Europe will not prevent the Colonial Office (which is charged with watching over the colonial interests of the empire as much in time of war as in time of peace), from listening to the just representations of the people of our most distant possession. Though equally good land is being sold at the rate of half a crown an acre by the American Government upon the main shores of the Oregon territory, opposite to the southern portion of Vancouver's Island, where Fort Victoria, the British settlement, is situated, the Hudson's Bay Company charge one pound an acre for land upon the latter. What can speak more strongly than this, for the insincerity of their professions in regard to their desire for settling the island? Even in Canada, in places within reach of excellent markets, the finest wild land is to be obtained at a less price than the Hudson's Bay Company are thus demanding for land in one of the most distant parts of the world. Under proper encouragement to agricultural settlers, Vancouver's Island and many portions of the Oregon territory belonging to

England, might become the granaries of all the posts situated in the high latitudes of the North Pacific.

With the establishment of a resident agency, or some other small but suitable machinery of government, in the several newly created provinces, for making surveys, and affording information and assistance to immigrants, who might purpose to settle upon lands, or desire to embark in the mines and other resources known to exist, or likely to be discovered, a population suited to the wants of each province would soon be collected, and rapidly extend in all. Liberal grants of land in the agricultural portions of these provinces, might also be made to officers and men, for services during the present war, upon condition of their occupying them, or of their making improvements upon them through others; or military settlements might be formed, somewhat similar to the military colonies of Russia. Many millions of the finest land, in accessible spots to the west of Lake Superior, might be appropriated at once for the purpose. Among the first selected should be the fine valley of the Kaministaquoia, immediately adjoining the lake at Fort William; to which point emigrants and goods can now be conveyed from Europe, without undergoing one single transhipment. These upper provinces of the north-west coast and the Saskatchewan country, and the lower provinces of Nova Scotia, New Brunswick, and Prince Edward's Island, being joined to Canada, the whole confederated provinces would, ere long, eclipse in importance all the other colonies of Great Britain put together, and become to her a mightier empire in the West than India has ever been in the East. Fast filling up with the hardiest population that can exist upon this continent, belonging to the finest European races, and breathing the purest and most invigorating

air in the world; with steam communication through out, from the Atlantic to the Pacific, and in constant intercourse, and interchange of brotherly acts, with England from one side, and with Australia, Borneo (which is destined to become a British possession), and India from the other, our North American empire would, at any moment of danger to her or to them, be able to concentrate within her own borders, or upon any part or extremity of the British possessions, the whole power of England and her colonies; would become the most powerful check upon the grasping propensities of the United States, and be the most glorious creation of the British people. As the United States shall increase in power and in arrogance, the more necessary will it be to England, and to Canada, to build up this empire of the United Colonies of British North America, and the more important will this noble possession become.

In the event of England coming to any understanding with Canada, in regard to the charge of Russian America, the Oregon territory, the Saskatchewan valley and the Red River settlement, or to that of Russian American alone, the province might easily raise and send from one thousand to fifteen hundred men to Vancouver's Island, to co-operate with our fleet. By embarking them in steamers for the Isthmus of Panama, permission to cross which might be easily obtained, they could be met on the Pacific side of the Isthmus, and be taken on to Vancouver's Island, or to Sitka direct, by vessels belonging to our fleet. At this period of distress among the poor, both in Eastern Canada, and the United States (60,000 men having lately been unemployed in New York alone), there would be no difficulty in obtaining the number of men required. Besides great inducements might be offered to them, by making the term of service only two or three years, and holding out

to them a promise of certain advantages at its termination, should they become settlers, still retaining a liability to perform occasional military duties, either in Russian America or in the Oregon territory. They should go, in short, as military colonists. Those having families, might have them sent on to Vancouver's Island, where they could remain until Sitka and the other posts should have fallen. Numbers of British subjects could also be procured for the service in California. Of this force, two-thirds of it should be composed of infantry and the other third of artillery; but, considering the description of works to be taken and occupied, the whole should be drilled to serve guns, which could be done on board ship. Two or three officers of the Royal Engineers should accompany the expedition. While this expedition should be organizing and in progress, a few officers, one of whom should belong to the latter corps, might proceed across from Canada to the Red River settlement, and with the assistance of the pensioners† stationed there, raise and organize, among the half-breeds and Europeans of the settlement, another body of troops for the same destination. The writer, who has seen a good deal of service in the field during the late war in Spain, would be willing to accompany either of these parties. The latter could take the route usually pursued by the Hudson's Bay people, and reach the coast opposite to Vancouver's Island, which should be the general rendez-vous, in about two months from the period of leaving the settlement. Provisions for the journey could easily be obtained at the latter; and, as many of the half-breeds there devote a cer-

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† The writwr has just been informed that these pensioners are shortly to be withdrawn, in consequence of a disagreement between the British Government and the Hudson's Bay Company, as to the illiberal treatment the pensioners have received from the latter.

tain portion of the year to the chase, and they would pass through a country abounding in game, they would often be able to procure food on the march, besides obtaining food at some of the Hudson's Bay posts, situated on the line of their route. To these posts an officer should always precede them for the purpose of collecting information and supplies. Along the country they would have to traverse, large bodies of unorganized and indifferently provided emigrants, accompanied by horses and waggons, have often proceeded without difficulty and without loss, to the Oregon; their having preferred this route to those less practicable and less healthy further south. Such a party Sir George Simpson overtook in 1842. The Red River people also are frequently in the habit of proceeding on horseback, through the same country of fine prairies and open valleys, to the foot of the Rocky Mountains, to hunt the buffalo. The daring and activity, which they are obliged to display in attacking these animals, when often met in herds consisting of upwards of a thousand, peculiarly adapt them for becoming excellent soldiers, were they formed into a corps like those of the light irregular corps attached to our native armies in India. Their tastes, too, created by such a life, would lead them to enter the service with great eagerness. They might also become very useful to form other corps upon, officered by Europeans, from the fine tribes of Russian America, who are naturally as intelligent, as vigourous and as daring as Europeans. These tribes repeatedly defeated the Russians when the latter first invaded their country, and showed much ability and ingenuity, as well as the greatest courage in their attacks. Upon one

occasion Sitka was entirely destroyed by them.* Should war unfortunately prevail for any lengthened period, we might form an army in a few years from the several tribes in that region, upon the system of our native armies in India, which would become of far more use for general service than the latter, though efficient as they have ever proved themselves to be in their own country; for the former would be able to endure, almost without suffering, any fatigue and hardship, be prepared to encounter any climate, and might be taken to any part of the world. England might thus obtain important sources of military strength, as well as add to her commercial prosperity, by the conquest of Russian America. By a proper organization of the territory, and a proper supervision and management of the natives, they would become, not only as tractable and civilized as the natives of India, but far greater ends in regard to them would be gained, in their being easily converted to Christianity; and, being physically far superior to the Indian tribes of Canada, or

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* Cox, in his "Russian Discoveries," relates that, after two defeats and experiencing the destructive effect of the fire arms of the Russians, the natives of Kodiak, advanced at daylight under the protection of wooden screens, to attack Glattoff and his men, who were strongly fortified in their ship, which was moored to the island. "Of these moving breast-works the Russians counted seven, and behind each from thirty to forty men, armed with bone lances. Dissuasion proving ineffectual, and the arrows beginning to fall aboard the ship, Glattoff gave orders to fire. The shot from the small arms, however, not being of force enough to pierce the screens, the islanders advanced under their protection with steadiness and intrepidity. Glattoff thereupon risked a sally, and succeeded in driving them off. The screens, which where left behind, were made of three rows of stakes placed perpendicularly and bound together by sea-weed and osiers; they were twelve feet broad and above half a yard thick. In one of the previous attacks upon Glattoff, the natives advanced with scaling ladders and bundles of hay containing sulphur (the produce of the island), for the purpose of taking or burning his vessel. Might not our engineers take a hint from the first described mode of attack of these natives, who had never had any intercourse with Europeans before, to protect our troops from the destructive effects of grape and cannister shot, as well as of musketry, in assaults upon works, where a flank fire could not be brought to bear upon them?

of the United States, it may reasonably be hoped, that if the "fire-water" be kept from them, that they would neither diminish in number, nor degenerate in body or mind. Many Indians, who are less adapted for becoming soldiers under European training, than the natives of Russian America, serve in the armies of the South American powers; and recently Brazil has organised and taken into pay a body of six thousand Indians, as regular soldiers. Though there are many instances of tribes of red men having diminished in number, or become extinct, since they were brought into contact with white men, whenever they learnt the vices, without acquiring any of the virtues of the latter, yet the popular belief which exists, that such must invariably be the result of all intercourse between the two races, is far from being correct. Not only does Bancroft, but other writers, describe the advancement, in numbers, in intelligence, and in wealth, of several tribes of Indians since they have been brought within the influence of the Christianity, the civilization and the industry of Europe. Alluding to some of the Indian tribes of the United States, Bancroft says: "The Indian of to-day excels his ancestors in skill, in power over nature, and in knowledge. Within the century and a-half during which the Cherokees have been acquainted with Europeans, they have learned the use of the plough and the axe, of herds and flocks, of the printing press, and water-mills. And finally, in proof of progress, that nation, like the Choctas, the Crees, the Chippewas, the Winnebagoes, and other tribes, has increased, not in intelligence only, but in numbers." It may be added here, that the Indians settled as agriculturalists upon the banks of the Grand River of Upper Canada, have also increased in numbers, in intelligence and in wealth. Of their prosperous condition, and of their gratitude to England for its enjoyment,

we have a recent proof, in their contribution of one hundred pounds, sterling, to the patriotic fund. By leading the fine and intelligent tribes of the north-west coast, to enter into some of the settled and profitable pursuits, which have already been alluded to, far greater results would doubtless be obtained among them, than Bancroft can bring forward, as the effects of civilization upon certain tribes, who have become tillers of the soil in the United States. Some of the Russian American tribes are physically and mentally, quite equal to the New Zealanders, yet what can be more gratifying than the results, which the introduction of order, of civilization and Christianity have effected among the latter!

Though a sufficient number of troops might perhaps be collected from the regiments in our Australian possessions to co-operate with our fleet in the conquest of Russian America, England could not well afford at this moment to retain them in the latter as permanent garrisons; and, for the reasons which have been already given, this conquest should be made exclusively for England. It might, therefore, not be expedient to leave French troops, which could be collected from the Marquesas, the Society Islands, and the Island of New Caledonia, in occupation of any of the Russian posts which the allied fleets may capture in that quarter. But if France should desire to acquire territory in the North Pacific, we might make another effort with her at Petropaulovski, and leave to her share the whole of Kamschatka. Or we might assist her to become the neighbour, both of China and Russia, at the mouth of the Amoor; where, besides planting herself as a very painful, and a gradually, yet continually penetrating thorn in the side of the latter power, she would acquire a territory, which, in its fine harbour, its magnificent inland navigation, its genial climate and productive soil, and its

admirable position, in regard to China, to Japan, and to the whole Pacific, would be one of the chief prizes of the war. Should France, however, hesitate to seize it, or be indifferent to its posession, we might hasten to secure it for ourselves; for, to a commercial and a colonizing country like England, having large interests at stake in China, and in every country of the East, the prize would be much more valuable than it could ever become to France. Australia, which will soon have a population of one million, and New Zealand, which, with Europeans, and a native population as loyal, as intelligent, and now almost as civilized, as the former, has already some two hundred thousand souls, might then each furnish a quota of men towards the defence of this newly proposed acquisition. But, as there is no chance of Russia disposing by sale of her possessions upon that side of the Pacific, to any power, however much their safety may be threatened, it is very important that the allied fleets should consume no time in an attack at the mouth of the Amoor, or in another attempt at Petropaulovski, until her possessions in America shall have fallen; for Russia will readily sell the latter, as soon as she can be brought to regard their retention as hopeless, and the Americans are prepared to purchase them at any moment. That the desire of the latter in this respect has not been already gratified, may be attributed to the confidence in her power of resistance there, which Russia has gained by the good use she has made of the time we have allowed her to strengthen the defences of Sitka, &c., and by the failure of the allied fleets at Petropaulovski. Should the fleets gain any very decided success against Russia upon the western shores of the Pacific, and appear to be in such force, as to be equal to the capture of her posts upon this continent, we shall, before the fleets have time to

reach the latter, hear of their sale to America; after which we shall only be able to capture them at the cost of a war with that power. There is little doubt of the existence of an understanding between the two powers as to these eventualities, and of the Russian Ambassador at Washington having full instruction to hand over the territory to the American Government at the proper time, if that time ever arrive. Should, therefore, the fleet proceed again to the westward, instead of attacking Sitka, we shall be playing completely the game both of America and Russia. The embroiling England and France in a war with America, together with the receipt of several millions, sterling, from the latter, would be a very acceptable compensation to Russia for the loss of her possessions upon this continent. Whenever she shall have been deprived of those possessions, whether through capture by ourselves, or by purchase to the Americans, the allied fleets would be released for any service which they could perform further to the westward, when they might be joined by a portion of our East Indian fleet, with colonial levies on board from Australia and New Zealand. They could then proceed with some definite object in view, and with some confidence, to attack Petropaulovski, or the Russian fortifications at the entrance of the Amoor, or both; and the prowess of our Australian soldiers there might be compared with the gallantry and endurance of our Canadian soldiers in Russian America.

By showing our readiness to furnish troops for the attack of Russian America, Canada would have some pretensions for claiming a voice in any future negotiations, which may be opened by the great powers of Europe in regard to the present contest, for she could then, with a very good grace, protest against the conclusion of any treaty of peace under which Russia should

be allowed to continue an American power. The giving up of Astoria, at the mouth of the Columbia, to the United States, at the end of the war of 1814, lost us an immense tract of one of the finest countries in the world, and nearly led us into a war with the same power in 1846. Who can tell what misfortunes may result to us, should we neglect the present opportunity for driving Russia entirely off the American continent? The possibility of her ever disposing of her American territory to the United States ought to be sufficient to urge us not to let that opportunity escape; for so soon as it should fall into the hands of the Americans, the latter would commence those encroachments upon the British possessions in its neighbourhood, which immediately followed their purchase of Louisiana, and the country extending along the upper Mississippi. from France.

The writer has endeavoured to point out the value of the reward, which Canada might secure, by furnishing the land force required, either to assist the British fleet in the conquest of Russian America, if not already captured, or to garrison its strongholds after that event shall have taken place: a description of force which England is unable to spare for these objects at a period when she is called upon to make the most gigantic efforts elsewhere. There is no doubt that the latter, in addition to the conferring of that reward, would cheerfully repay any expense which the province might incur in rendering such assistance; but, for the honor and credit of the province, it is to be hoped that she would not take money in payment for a service, in the benefits of which she would directly participate, and which could not be compared to many similar, but more difficult services, spontaneously offered, and often magnificently executed by the former British provinces, now constituting the United States of

America. Some of those performed by the latter, such as the capture of Louisbourg, the attack on the Spanish settlements at Carthagena, in South America, and other places situated on the Gulf of Mexico, and the French West India Islands, were nearly parallel to that, which is now proposed by the writer to be undertaken by the province; and most of them were carried out at their own cost, their neither asking for, nor receiving any compensation, for the large sums which they so generously expended, or for the noble lives which they so gallantly sacrificed. They freely gave their money and their blood for the prosperity and glory of the empire of which they formed a part. In the present contest, entered into by England for justice and liberty, we have hitherto given little else than an expression of our sympathy. Many persons in Canada have been even crying down our doing anything at this moment towards relieving England of the expense of providing for our own military wants, at a period, which, to the province, may be considered as one of profound peace; and have represented the latter, with a revenue of £2,000,000, as unable to maintain one corps for our own garrisons. As these parties have taken up this cry evidently from their total ignorance of the history of the British provinces, and plantations in America, before they became an independent state, it may not be out of place to give a few instances here, of what the British colonists of that period had the spirit to undertake, and the ability to perform, with one-tenth the resources in men and money, that Canada could at this moment command. The first step towards providing for the regular defense of the country, appears to have been taken by Virginia in 1630, when, according to Bancroft, in his "History of the United States," "the Virginians enjoyed the benefit" (as Canada does now), "of independent legislation; they

levied all taxes, secured the free industry of their citizens, and guarded the forts with their own soldiers at their own expense." Governor Hutchinson, in his "History of the Colony of Massachussetts' Bay," published in 1785, states that in 1653, the northern colonies "raised 500 men to act against the Dutch, but peace being suddenly declared, these troops, under Major Segewick, formerly of the Honorable Artillery Company of London, and Captain Leveret, were used to dislodge the French from Penobscot, St. Johns." Considering the means and the population of the whole of the British colonies upon this continent at that period, the population being little more than one hundred thousand, and looking to the present means and population of Canada, this effort, made by a few only of those colonies, would not be equalled by us, were we to raise and pay fifty thousand men for any service out of the province, in aid of England, at the present juncture. In 1690, according to the same authority, "a representation was sent to England from the colonies, asking for a supply of arms and ammunition, and a number of the King's frigates to attack the French by sea, whilst the colonial forces should march by land, and perform their parts." At the time, however, the hands of the Government in England, were too full to give any attention to the request. Notwithstanding this discouragement, Massachusetts determined to proceed of herself, and Connecticut and New York engaged to furnish men. Two thousand men were accordingly raised by the latter, and marched by Albany to attack Montreal, while the fleet, furnished by Massachusetts, consisting of thirty-four vessels, and conveying about an equal number of soldiers, belonging to that province, as the force despatched against Montreal, proceeded up the St. Lawrence. These expeditions only failed through the want of concert between

the two attacks, Frontenac being able to meet and defeat each in succession. Referring to these aggressive movements of the colonies, Bancroft says: "Thus did Massachusetts, Connecticut and New York, not only provide for order and tranquility at home, but, unaided by England, plan the invasion of Acadia and Canada." The extreme difficulty to which the colonies were put by the expense, and the failure of the two expeditions, induced them to raise funds by bills of credit (the first issued by them), as a substitute for money; but which, the historian of that period adds, "had better credit than King James' leather money, issued in Ireland about the same time." From 1692, until Acadia was restored to France several years afterwards, Massachusetts, at her own expense, maintained a garrison at Fort Pemaquid, situated in the former territory. In 1704-5, South Carolina fitted out expeditions, also at her own cost, against the Spanish settlements in Florida, and, after an unsuccessful attack upon St. Augustin, captured a number of towns, and "carried the English flag triumphantly through the wilderness to the Gulf of Mexico." The force which made the final capture of Port Royal (called by the conquerors Annapolis in honor of Queen Ann), and the whole of Acadia in 1710, was composed of six vessels belonging to the British Navy, and of thirty vessels and four regiments belonging to New England. At that period the population of the whole of the British colonies, from the frontier of Canada to Florida, was little more than three hundred thousand souls ! To raise a force to accompany the British fleet, conveying seven veteran regiments of Marlborough's army, against Quebec, in 1711, the general court of New England issued forty thousand pounds in bills of credit; and, to assist to procure fresh provisions for the fleet while at Boston. Provisions having risen enor-

mously high in consequence of its presence there the gentlemen of that city were induced to deny themselves of every luxury, and to engage while the fleet lay there, to eat nothing but salt provisions in their families. The army for the expedition, including two regiments from New England, numbered 7,000 men, a force about equal to that which afterwards reduced Quebec. Through the loss, however, of several ships, and of one thousand men, upon the north coast of the St. Lawrence, between the Seven Islands and Cape des Monts, the Admiral, Sir Hovenden Walker, lost heart, and retreated with the remainder of the fine army on board, without having sighted Quebec; and a force, which the colonies had sent by Lake Champlain against Montreal, had in consequence to retreat also without effecting anything. During that summer about one-fifth part of the whole inhabitants of Massachussetts, capable of bearing arms, were in the pay of that province, and the like proportion were employed for two or three years successively in the next war with France. How could Canada ever equal this, or the previous sacrifices mentioned? In alluding, in glowing terms, to the efforts which were made by the colonists about this time, Governor Hutchinson says: "I cannot avoid reflecting also upon the heavy burdens which the province subjected itself to during this war, I suppose beyond those of any other ten years from the first settlement. The castle and other fortifications at Boston, the several forts in the eastern country, the various expensive expeditions actually prosecuted, and the preparations made for others, added to the constant defence of the extensive frontiers, and to the support of the civil government, without any relief or compensation from the Crown, certainly must have occasioned such an annual burden as was not felt by any other subjects of Great Britain, and

the merit of the people of that day ought not to be forgotten." Most of the military preparations and operations of the colonists, whether of offence or defence, originated with themselves, but, in the following instance, it appears that they were equally ready to respond to any call made by England for foreign service. Having, in 1740, prepared to send to the West Indies the largest fleet and army that had ever appeared in the Gulf of Mexico, England summoned the colonies north of Carolina to contribute four battalions to the armament. "No colony refused its quota; even Pennsylvania, the Quaker province, voted a contribution of money, and thus enabled its governor to enlist troops for the occasion." The combined forces, thus composed of imperial and colonial troops, proceeded to attack Carthegena, the strongest place in Spanish America, where, although not successful, they gallantly assaulted and did much damage to the principal works; but, after reducing and destroying several other places, and forts throughout the country, and suffering immense losses, they retreated to their ships. The expedition had been intended to prepare the way for conquering Mexico and Peru: a far more formidable project than the conquest of Russian America would be in the present day. From that period, until 1742, South Carolina, under its governor, the estimable and gallant Oglethorpe, repeatedly attacked the Spanish settlements, and also defeated the Spaniards in an invasion of Georgia. In 1744, Massachusetts sent to, and maintained, at her own cost, two hundred men at Annapolis, for the defence of Nova Scotia, who were the means of preventing that province from falling once more into the hands of the French. For the memorable siege of Louisbourg, a few of the colonies provided between them, one hundred vessels, and raised an army of 5,100 men, at an

expense of £235,749; and although the British fleet co-operated with this force, the latter, commanded, too, by a colonist, Colonel Pepperell, a large landed proprietor and a merchant, had the chief glory of the capture. This, it appears, was a single instance in which the money expended by the colonies, either for their own defence or for foreign service, in support of the empire, was refunded to them by England, though the undertaking was planned, and commenced by the former, without orders from, or the knowledge of the latter. Of this achievement Governor Hutchinson says, "the reductions of Louisbourg by a British colony must have been a surprise to Great Britain and France, and it caused very grand plans of American measures for the next year." To co-operate with eight batallions of regular troops, to be sent from England in the attack on Canada the following year, the New England colonies raised 8,200 men, the Massachusetts portion of which (3,500 men), was ready to embark about six weeks after the first notice; but the expedition not being then carried out, the whole of the troops raised by the colonies were continued in pay until September of the next year, and some of them served for defence of the frontiers. In 1754, Virginia alone voted £10,000 for defences. In Braddock's unfortunate attack in 1755 on the French upon the Ohio, the colonial troops, under Governor Shirley, bore an important part, and did great service in covering the retreat. During the same year 2,200 militia of the northern provinces, which composed the force under General Johnson, defeated a much larger army of the French advancing against the former from Crown Point. Speaking of the gallant exploits of this provincial commander, Mante, in his history of the war of that period, says "He had the singular satisfaction of returning victorious with his pro-

vincials, when the army composed chiefly of regulars, sent against Fort du Quesne met a total defeat, and that designed against Niagara, consisting of regulars also, was obliged to abandon the enterprise. Sir William Johnson's was the only success gained during that campaign." In the conquest of Canada shortly afterwards, the colonists followed up Wolfe's attack on Quebec, by Crown Point and Niagara, and fought several actions before the whole country was subdued. In the operations ot that period against Crown Point, as many as 5,279 provincials were employed; and after its reduction 1,750 of this colonial force, besides regulars, proceeded by Lake Champlain, to join General Amherst before Montreal; while the army which had accompanied him there, and had fought its way by Niagara and the St. Lawrence, contained a large proportion of provincials, consisting of the New Jersey regiment, four battalions of the Connecticut regiment, three battalions of the New York regiment, and 146 rangers. For the siege of Havannah, Jamaica raised at her own expense 1,500 negroes, who joined the English army before that place at a very seasonable moment; and during the year 1797 Nova Scotia contributed £6,894 14s 11d. towards the support of the war against France; which was nearly half the revenue of the province at that time. Besides these, and many other similar services, the colonies carried on, entirely at their own charge, many formidable wars with the Indians, some of which, such as that against the Pokanokets, commonly called Philip's war, lasted for many years, and cost several thousand lives. They also, upon many trying occasions expressed their sympathy with the government, and the people of England, by the most loyal addresses and the most generous contributions, many of the latter, considering the difference between their means

and ours, throwing our recent contribution of £20,000 to the patriotic fund, quite in the shade. Upon the arrival of the intelligence of the great fire of London, a collection was immediately entered into throughout the colonies for the relief of the sufferers, upon so liberal a scale, that a single collection in one church at Charleston realized £105 sterling! They repeatedly sent provision as a free gift to the British fleet in the West Indies, and spars and masts to England; the last, Pepy's states, "being a blessing mightily unexpected, and but for which we must have failed the next year." Nor were there wanting instances of the expression of a kindly feeling towards the colonists upon the part of the people and government of the "old country." On one of these Bancroft says: "Let us not forget a good deed of the generous Irish, after the termination of the war of the Pokanokets; they sent over a contribution, small it is true, to relieve in part the distress of Plymouth Colony; and Connecticut, which had contributed soldiers to the war, now furnished the houseless with more than a thousand bushels of corn." Thus did mutual sympathy exist, and thus was mutual assistance rendered between the mother country, and the colonies, and between each colony, as we have witnessed in our own day between Great Britain and her present colonies. Among the more recent acts of generosity between England and the latter, which should not be passed over at this moment, are the handsome subscriptions which were raised throughout the United Kingdom, and the grant by the Imperial Parliament of twenty thousand pounds, in 1846, for the relief of those who had suffered by the great fires at Quebec in that year; and the munificent payment by the Home Government of the whole expenses, amounting to one hundred and eighty thousand pounds, incurred by Canada through the large immigra-

tion, and its accompanying affliction of ship fever, in 1847. Nor should the liberal public grants and private subscriptions, contributed in proportion of their means, by all the British colonies and possessions in every part of the world, in aid of the sufferers in the present war, be left unnoticed. But the former colonies did far more than minister to the necessities of the victims in the contests of the mother-country; far more than we have yet had the spirit to attempt, or have ever been called upon to perform. They not only provided, at their own charge, for their own defence, in time of war as well as during peace, but they carried on aggressive wars, and sent forth distant expeditions against the French and the Spaniards. The merit of the people of that day ought indeed, not to be forgotten. May the remembrance of it influence us to attempt to do likewise.

ARTICLE 19.—*The Social Condition of the Coast of* LABRADOR. *By* NOEL H. BOWEN, *Esquire.*

[Read before the Society, 19th April, 1854.]

THE recent interest evinced by the Imperial and Provincial Authorities in the valuable fisheries of our Gulf, and the pending negotiations with the United States Government relative thereto, have induced me to select as the subject of this paper "The Social Condition of the Inhabitants of that part of the Coast of Labrador lying within the limits of the Province of Canada." The desire of witnessing these fisheries prompted me to visit that distant portion of our Province, and I cannot but look back with pleasure to an excursion replete with objects both interesting and novel. We left Quebec in a trading schooner in the month of July, and coasted along the north shore of the River St. Lawrence, our progress much retarded by a succession of adverse winds. On the voyage we visited Seven Islands, Mingan, and other of the Hudson's Bay Company's posts, and occasionally enjoyed a day's fishing or shooting in the small rivers abounding along the coast. In some of these there were water-falls that would gladden the eye of a landscape painter. On the banks of others were the relics of old Indian encampments. In many the black duck, shell-drake and other fowl had fixed their abode, fondly imagining it so secure from intrusion as scarcely to heed our approach, until

sundry murderous guns had thinned their ranks, and considerably disturbed their domestic arrangements. These rivers are mostly filled with large sized trout which eagerly grasp at a gaudy bait, and fall an easy prey even to the most unskilled angler.

Fifteen days elapsed ere we reached the Bay of Tabatière, distant about 900 miles from Quebec: this is the chief seal fishing establishment on the coast, with a poputation of about sixty souls; the bay is large, intersected by ten or twelve islands, and the average annual catch of seals at its different stations about two thousand. Each seal is worth a little over twenty shillings currency on the coast. This establishment is owned by Messrs. Samuel and John Robertson, sons of the late Samuel Robertson, Esquire, formerly of Quebec, the author of a valuable paper furnished to this Society in the year 1841, entitled, "Notes on the Coast of Labrador." Spar-point, the residence of Mr. Samuel Robertson, boasts of about sixteen buildings, the largest collection at any one point on the Labrador. At Petit-Havre, Blanc-Sablon Bay and Isle-aux-Bois mnay persons are employed during the fishing season, but these come and go yearly with the vessels to which they belong, and have no permanent habitation on the coast.

One of the first things that struck me as peculiar to Labrador was the absence of trees and vegetation, excepting an occasional shrub or bush and a few stunted pines. The ravines between some of the hills were filled with snow, which remains there from year to year, and fields of it were visible in secluded spots even in the month of August.

That part of the Coast of Labrador belonging to the Province of Canada, namely, from Mingan to Blanc-Sablon Bay, inclusively, is about 450 miles in length: it

consists of immense blocks or masses of granite, over which a thin coating of moss has in most places accumulated: this frequently hides the uneveness of the rocks, and renders walking unpleasant if not dangerous. The moss is green in the summer season, so that the shores when viewed at a distance do not appear so barren as they are found to be on a nearer approach. The face of the country is uneven, presenting a succession of hills and gullies, mountains and ravines, interspersed with innumerable shallow lakes and swamps. Huge boulder stones are likewise seen in all directions.

The dwelling houses of the people are built of wood, imported for that purpose from Quebec or elsewhere, there being no lime to encourage masonry. The late Mr. Robertson asserts that limestone is found to some extent near Mingan: if so, its proximity is not generally known, or, what is more probable, it would be too expensive to send for and manufacture the stone to supply such a limited demand. The houses are far apart, generally three or four miles distant from each other, if not more: the reason is that seal-fishing being the most important part of their occupation, the fishermen would seriously interfere with each other did not a considerable distance exist between each fishing berth or *pêcherie*. Occasionally a little patch of ground containing a few potato or turnip plants was visible in the vicinity of a house, but these do not always ripen, and, save the enclosures around such plots, no fences or hedges meet the eye.. A horse is not to be found on the coast, nor would he indeed be of much utility, for there are no roads whatever, and the possibility of making highways over such uneven rocks is rather dubious. Footpaths are not wanting to communicate from one station to another, but these are rarely used. The people, without exception,

live on the immediate seashore; their travelling in summer is performed by water, in winter by dog-train called "commetteks." There is a cow or two at several of the chief posts, but with this exception, the good fishermen can boast of no cattle, neither pigs, sheep nor goats wander around their dwellings, and a poultry-yard is a thing unknown. Those who have passed their lives on the coast can have little idea of the pleasing association of a regular farm with its varieties of cattle, poultry, &c. but if they have not the comfort neither have they the cares of husbandry, and the weather (that fountain of anxiety to the agriculturist) is merely looked upon by the inhabitants with an eye to its effect upon their piscatorial arrangements.

No church or chapel rears its tall spire towards Heaven, no consecrated building invites the fishermen to assemble for the Worhisp of God, yet there is no lack of religious feeling amongst the people, and the Sabbath seemed to be everywhere strictly respected. Could not a Missionary be spared to visit this portion of the Province occasionally? He might embark in the vessel despatched every year for the protection of the fisheries, and establish himself at Blanc-Sablon Bay, where the population in the summer season exceeds 200, chiefly Jerseymen; he could then visit the other posts from time to time, as circumstances permitted, and return to Quebec in the autumn by the same vessel. Surely the labors of a faithful Missionnary in such a field would be abundantly blessed. From there being no resident clergyman, many of the marriages which take place on the coast are not legally solemnized, and a statute will be required for their relief similar to that obtained for the people of Gaspé through the exertions of Robert Christie, Esq., their able and indefatigable representative.

The neatness found in the dwellings even of the poorest class is worthy of note: they possess few articles of furniture, but all is clean and has a homely appearance. I could not help remarking that a gaudily painted timepiece adorned nearly every cabin, testifying to the perseverence with which "Brother Jonathan" finds a market for his goods, even in the most distant portions of the continent.

Several American schooners are in the yearly habit of frequenting the coast, to barter their *notions* for fish, oil, and other produce: this they are enabled to do with immense advantage to themselves, as we have no Custom House Officers at Labrador; consequently the Americans, paying no duty on their imports, find themselves in a better position than traders from any British Colony, and are enabled of course to undersell them. Captain Fortin exposes this circumstance in his "Report on the Fisheries of the River St. Lawrence," furnished to the Provincial Government in the month of May last. He suggests that one or two officers should be stationed on the coast during the summer season, charged with the collection of Customs on all dutiable articles of import. The revenue derived from this source would probably cover the salaries of the officials, and Colonial traders be thus placed at least upon an equal footing with foreigners.

The people of Labrador are happy and contented, their manners affable, their habits temperate, and their hospitality sincere. In shooting excursions I have roamed about the coast for days, stopping wherever inclination led me, and invariably received a hearty welcome from the honest fishermen with the best of their frugal cheer; one only feared to trespass on their kindness, for they would not accept of any remuneration.

And here I would notice the fact that the number of females is quite disproportionate to that of the sterner sex, as may be gleaned from the last mentioned Report, which shows that in 1852 there were 364 men settled on the coast and but 62 females. This is of course detrimental to the prosperity of the place, and should be remedied by emigration or otherwise. Any plan which would alter the existing state of things must confer a boon on the country, because the more the coast is settled the better are its natural resources developed, and the miseries suffered by ship-wrecked mariners, proportionately diminished. The fisherman's wants are few, and he can easily support a wife; moreover she could assist him in his calling as much as one of his own sex, and it often happens that the larger a fisherman's family becomes, the better are his prospects. The residents of the coast are supplied with beef, pork, flour, and other necessaries by the schooners from Quebec and elsewhere, employed in the export of fish and oil, but, like the ant or humming-bee, they must lay up their store of luxuries during the summer season, impenetrable barriers of ice excluding communication with the outer world during about seven months in the year.

Labrador is essentially the field for sportsmen: such fishing and shooting are not found in any other part of Canada during the summer months. Large sea-trout and salmon swell the streams, while sea-birds of every name and description, as well as ducks, geese, curlews, &c., abound on the shores. Among the sea-birds are *Mermettes*, Moyocks, Gulls, Murrhs or *Calculots*, Turrhs, *Paraqvets*, Penguins, and divers others. The Bird Islands, which are numerous along the coast, consist of barren rock, sometimes of considerable extent, and generally three or four miles distant from the main land: they literally

swarm with sea-birds, and the approach of a boat or the firing of a gun in their vicinity is enough to set the whole living mass in motion; rising in the air the birds fly around at no great distance in countless thousands, uttering incessantly the most piercing shrieks; they move with such velocity that it requires a good marksman to bring down his bird at every shot, but are so numerous that if you miss the one aimed at you often hit another in his wake. These Bird Islands are invaluable to the fishermen, who supply the want of poultry by collecting boat-loads of eggs in the spring, and packing them for consumption during the remainder of the year. The eggs of the *Mermette*, *Penguin* and small Divers are considered the best: they all have a slight fishy taste scarcely perceptible when cooked, and the beaten yoke forms an excellent substitute for cream in tea or coffee. The birds inhabiting these islands are not considered eatable except when very young: then indeed their flesh is tender, and a sea-pie of young gulls is not to be despised. For years past the Americans have frequented these islands in numbers during the early part of June, when the birds lay; being armed they keep possession of the islands by force, and do not suffer the inhabitants of the coast to approach until they have fully laden their schooners with eggs. It is to be hoped, however, that the vessel devoted to the protection of the fisheries will prevent such depredations for the future. Guano has accumulated on these islands to some extent, and if its manuring properties are not seriously injured by the winter's snow, might surely be turned to account. The plumage of the birds is soft, and suggests the possibility of profitably collecting and curing feathers on the coast for exportation to foreign markets.

During the month of August "Curlews" afford much sport, and are excellent birds for food. In size they resemble the wild pigeon, their plumage brown, with orange breast, and have much the flavor of woodcock; they frequent the beaches at low tide, at other times you must seek them on the flats and marshes. Some families salt and pack them for winter use. In the bays lobsters are procured at low-tide, from crevices in or under the rocks: they are caught by thrusting in a long pole which the fish seize with their powerful clutches, suffering themselves to be dragged out rather than relinquish their hold. As to fruits or berries there are none on the coast excepting cranberries and another small berry called a "bake apple," somewhat resembling the pigeon-berry: when ripe the colour is of a bright orange and the flavour luscious. I never saw this berry elsewhere. There are few rare shells or stones on the beaches, but the Labrador feldspar is often picked up, especially in the Bay of Tabatière, whose chief station, "Spar Point," owes its name to the beauty and variety of its feldspars. Reefs of red and white coral are known to exist in some places, and pieces of it are occasionally fished up in nets. The wharves or landing places in use here are called stages: they are not solid as with us, but formed of opened stakes driven firmly into the banks or shore, which allows the sea to break on them in rough weather with less violence than if solid, often preventing their being dashed to pieces by the fury of the waves.

During the winter months reindeer afford fine sport to to the hunter, and form (with the ptarmigan or white partridge that visit the coast in thousands) the only fresh meat procurable. Moose and cariboo do not roam so far north. Frequent social meetings take place at this season of the year, where dancing and singing serve to while

away the lengthy evenings, and where the hardy hunter loves to recount his exploits to an appreciating audience. Winter travelling is performed either on snowshoes or in trains drawn by the celebrated Labrador dogs, which are prized by the residents much as we would value favorite steeds. These dogs are by no means friendly to strangers, and their fierce wolf-like heads inspire considerable respect. They plunge into the icy sea as readily as though it were their native element, and are invaluable to their owners in hunting and shooting excursions, no less than in travelling across the snowy deserts. They are stout and well made, are fed principally on seal and blubber, and are so hardy that six or eight of them tackled to a heavily laden sledge or "commettek" will travel as much as twenty leagues in a day. These dogs have an odd peculiarity: about midnight they set up an unearthly howl (each dog having its peculiar note) which lasts sometimes for an hour, sometimes throughout the whole night. From habit the residents do not heed the noise, but a stranger is distracted, and finds it impossible to sleep.

The boats used on the coast are of American construction, sharp at either end, have two small poles or masts, and are called "barges:" they sail swiftly and are said to weather a storm even better than our pilot boats. American schooners coming to fish carry several of these boats, and at the close of the season willingly sell them to the fishermen: their value is about *L*9 currency.

During my stay on the coast I chanced to meet with some of the Esquimaux tribe, who have almost quite deserted that portion of the Labrador south of Blanc-Sablon Bay. These Esquimaux had adopted the dress and habits of the fishermen, and the only original articles seen in their possession were ki-yacks or seal skin boa[illegible] which are quite worthy of notice. A ki-ya[illegible] made

seal skin sowed over a light frame work of wood, having but one round hole for ingress in the centre: the skin is previously freed from hair, steeped in warm water and sewed with a peculiar double seam; when dry the skin contracts as tightly over the wooden frame as the head of a drum, is well oiled, and made impervious to water, and the boat is so light that a single person can carry it with ease: its dimensions are about 20 feet long, 2½ feet broad and one foot deep in the centre, tapering off to a sharp point at either end; it holds but one person at a time, who sits in the centre, all below his waist being invisible. These boats when manned draw but two or three inches of water, are sensible to every ripple, and though extremely dangerous to a novice have been known (when managed by Esquimaux) to live through storms in which many a schooner foundered. They are propelled by a double-bladed paddle some ten feet long, whose centre rests on the boat, and the blades are dipped alternately from side to side urging on the boat with astonishing rapidity.

The most picturesque spot on the Labrador is the Bay of Bradore, situated about half way through the Straits of Belleisle, and opposite St. Géneviève Bay, Newfoundland, which is visible from Bradore in clear weather. Captain Jones is the chief occupant of this post, from whose residence on a slightly elevated ground is obtained a fine view of this magnificent bay, studded with islands, and having a background of bold and lofty hills. The waters of the bay are enlivened in the summer season with brigs, schooners and fishing smacks from different parts of the world, but belonging chiefly to Jerseymen and Americans. Near to Captain Jones' residence may be seen mounds of earth and rubbish in all directions, the ruins of the ancient post or town of Brest. This town

(it is generally believed) was commenced by the Basques, inhabitants of Spain, who resorted thither for fishing purposes in the early part of the sixteenth century, and who congregated for defence against the Esquimaux and other hostile Indian tribes. When the country fell into the hands of France the town of Brest reached the height of its prosperity, and Robertson cites authorities to prove "That towards the close of the sixteenth century it was "the chief town of New France; could boast of some 200 "houses; was the residence of the governor, almoner, "and other public officers; and that the French drew "from thence immense quantities of furs, cod-fish, whale-"fins, train oil, &c." When the Indian tribes became more civilized, and ceased to molest settlers, the French finding superior fishing grounds, gradually scattered themselves over the coast, and the deserted town of Brest or as it is now called "Bradore," slowly crumbled away, until a few mounds and stone foundations alone mark the site of its former prosperity. Mayhap some Canadian "Layard," searching amid the ruins of Brest, may yet discover much that can throw light upon the early history of our country. The climate of Labrador is healthy and salubrious, with frequent fogs; sickness and disease are scarcely known, and the people enjoy robust constitutions. The chief occupation of the inhabitants is fishing, as divided into the seal, cod, salmon, mackerel and herring fisheries, the seal fishery being the most considerable. Whale fishing was formerly carried on sucessfully in the Straits, but is now abandoned, whalers being seldom seen in those waters. Occasionally the waves cast upon the beach a carcase pierced by harpoons, but such precious gifts to the fishermen are rare. Captain Fortin reports that the resident population of our portion of Labrador was 648 (all ages and sexes included) in the

year 1852, the value of whose united annual produce was *L*16,576 10s., without taking into account the immense value of the fish carried from our shores by strangers. Since that report was made an Act, (16 Vic. cap. 93,) has passed the Canadian Legislature, having for its objects the regulating of the fishing limits at Labrador, from which much good is anticipated. In an able lecture, lately delivered by M. H. Warren, Esq., before the Mechanics' Institute of St. John's, Newfoundland, that gentleman established the yearly value of fish taken from our waters at £3,000,000 currency, and upwards: this includes the Colonial and Foreign fisheries both at Newfoundland and Labrador, and presents a mine of wealth far more lasting and profitable to us and to the world at large than all the golden fields of California and New South Wales. And yet, knowing the riches with which a bountiful Providence has lined our shores, and having this countless treasure within grasp, will it be believed that not ever one vessel sails hence during the year to participate in these fisheries? The ships of other nations flock to the banks like vultures around their prey, while we look on with shameful indifference. Are we then too rich or too indolent to appreciate our natural advantages? The subject needs enquiry, and, if expedient, bounties, direct or otherwise, should be granted by the Government to persons willing to embark in the enterprise.

In the foregoing remarks I have endeavoured to show the actual social condition of our people on the Labrador, the advantages and disadvantages under which they live: doubtless, they may suffer some privations, but they have many comforts in return, and a man may fare worse than to be doomed to pass his days in the midst of these worthy fishermen. Nay more, the people cling to their rugged coast with all the patriotic sentiment of Scotia's bard, when he sang:—

"Breathes there a man with soul so dead,
"Who never to himself hath said
"*This* is my own, my native land"

They would not exchange their peaceful homes for all the luxuries of the town, and when business calls them to it, they never cease to pine for the bracing air which surrounds their cherished homes on the rocky coast of Labrador.

Quebec, 18th April, 1854.

ARTICLE 20.—*Reminiscences of the survey and cutting out of the Boundary Line between Canada and the United States, from the Spring of* 1843 *to the close of operations in the field, in the fall of* 1845. *By* F. N. BOXER, *C. E.*

[Read before the Literary and Historical Society of Quebec, 17th October, 1855, and published in the Journal of the Society.]

As no account has yet been published of the very interesting survey of the Boundary Line between Canada and the United States, which took place between the years 1842 and 1845, except that by Lieut. Col. Robinson, R.E., published in the "Corps' Papers," which is principally confined to matter purely of a scientific nature; I have been induced to put hastily together, to read for you this evening, a few reminiscences of my own observations of what took place during the period of my employ in the Commission, regretting, at the same time, my inability to obtain Col. Robinson's Report, that I might have embodied with these recollections some of the valuable information therein contained.

The important question of the actual division line that should form the boundary between Canada and the States, for a long period of years was a matter of dispute, and even at one time seriously threatened the peace of the two Powers: therefore, as a preface to these observations, I will endeavour to afford a brief account of the tract of disputed territory which formed for so many years a subject of controversy.

The actual boundary in dispute was the line between the English and French possessions whilst Canada belonged to the Crown of France.

When the treaty of 1763 gave to Great Britain possession of all the territory on this side of the Mississippi, it was then found necessary to establish new division lines of the conquered countries,—which was done by proclamation in the same year, as follows:

"The Government of Quebec is bounded upon the "Labrador Coast by the River St. John; and from thence "by a line drawn from the head of that river to the south "end of Lake Nipissing; from thence the said line, "crossing the River St. Lawrence and the Lake Cham- "plain in forty-five degrees north latitude, passes along "the highlands which divide the rivers that empty them- "selves into the St. Lawrence from those which fall into "the sea, and also along the north coast of the Baie des "Chaleurs, and the coast of the Gulf of St. Lawrence, to "Cape Rosier; and from thence, crossing the mouth of "the River St. Lawrence by the west end of the Island "of Anticosti, terminates at the aforesaid River St. "John."

The treaty of peace between Great Britain and her old Colonies (now the United States) was concluded in Paris in 1783. By this treaty Great Britain recognized the independence of those States severed from her by revolutionary war. But to recognize the old colonists as a new and separate nation, was a very different thing to surrendering to them any portion of that territory which formed our new possessions in America, the people of which had, during that unfortunate revolutionary war, remained faithful to England. Nor had the old colonists (now recognized as an independent power) any claim upon the territory which we had acquired from France,

as theirs was a war of principle and rights, not of conquest.

The most restricted claim of Great Britain was from the mouth of the River St. Croix; but doubts having arisen in 1794 as to what river was truly intended under the name of the River St. Croix, two Commissioners were appointed, Thomas Barclay, Esq., on the part of England, and David Howell, Esq., on the part of the United States, to carry into effect the fifth clause of the treaty made in that year; and Egbert Benson, Esq., a Judge of the Supreme Court of New York, was appointed an umpire by mutual agreement. The umpire determined that the River Schoodic was the true St. Croix.

But unfortunately a new difficulty soon presented itself, for, on ascending this river about 25 miles, two streams were met with, one from the west, running through the Schoodic Lakes, the other taking its source in Grand Lake. The American Commissioner contended that the latter branch of the St. Croix was that branch at whose head waters the point of departure was to be taken, whilst the Commissioner of Great Britain urged that the point of departure should be the westernmost branch of the St. Croix. After the expiration of two years, the umpire rejected the American claim.

This point once decided, it would seem that the functions of the two Commissioners had ceased, and all that remained to be performed was to place the Boundary Stone, indicating the point of departure of the head water of the *westernmost* branch of the Schoodic River. *This was not done.*

But it appears certain that the point of departure was fixed at the highest waters of the *northernmost source* of the Schoodic River, and not the *westernmost*, and this *fatal error* gave rise to all the difficulties which for nearly

half a century afterwards embarrassed the settlement of this most important question. The loss of territory that would have been incurred by this mislocation of the point of departure would have been very great, embracing nearly one million and a-half of acres.

If the point of departure had been properly marked at the time that the umpire gave his decision on this point, the next question of discussion would have been the settlement of the line.

The article of treaty of 1783 provided as follows:— "That all disputes which might arise in future, on the "subject of the boundaries of the United States, may be "prevented, it is agreed and declared, that the following "are and shall be their boundaries, viz: from the north- "west angle of Nova Scotia, to wit: that angle which "is formed by a line drawn due north from the source of "the St. Croix River to the highlands; along the said "highlands, which divide those rivers that empty them- "selves into the St. Lawrence from those which fall into "the Atlantic Ocean, to the northwest head of the Con- "necticut River; thence down along the middle of that "river to the 45th degree of north latitude; from thence "by a line due west on said latitude, until it strikes the "River Iroquois or Cataraqui."

All these difficulties were finally adjusted in 1842, under the Ashburton Treaty, by which a compromise was made of the territory in dispute. In the same year, two Commissioners were appointed to run the boundary according to the provisions of this final treaty. The Ashburton Treaty stipulated that the boundary should be a line drawn from the northernmost source of the River St. Croix, and running due north until it reached the River St. John; thence up that river to the mouth of the River St. Francis; and continuing along the middle of that

stream until it reaches the outlet of Lake Pohenagamuk. in latitude 47° 27′ 33″, longitude 69° 13′ 18″. From this point the boundary takes a south-westerly direction in a straight line for 64 miles, until it strikes the north-west branch of the River St. John, near the outlet of Lake Ishagelnashagook in latitude 46° 34′ 36″, longitude 69° 52′ 56″, from thence in a straight line for 19 miles, until it strikes the south-west branch of the St. John in latitude 46° 25′ 12″, longitude 70° 03′ 36″. The boundary then is the middle of this branch of the river up to its source in the highlands which divide the waters running into the sea from those flowing into the St. Lawrence. This dividing ridge then forms the boundary for a distance of upwards of 150 miles, until it reaches the source of the head waters of the westernmost branch of the Connecticut, viz: "Hall's Stream," and then follows down this brook to the forty-fifth parallel of north-latitude; from thence this parallel forms the dividing line until it strikes the St. Lawrence at St. Regis. The whole line of boundary from St. Croix to St. Regis is over 700 miles in length.

The Commissioners appointed to superintend the survey and cutting out of the line were, Lieut. Col. J. B. Bucknall Estcourt (the late Adjutant General to H. M. Forces in the Crimea,) acting for Her Britannic Majesty; and Albert Smith, Esq., acting on behalf of the United States Government.

Lieut. Col. Estcourt was accompanied to this country by Capt. Broughton, R. E., Capt. Robinson, R. E., (the present Commissioner of Boundary for New Brunswick and Canada,) Lieut. Pipon, R. E., Mr. Featherstonhaugh, C. E., and Mr. John Scott, the Secretary to the Commission. Mr. Wilkinson, of the Crown Land Department in New Brunswick, was also attached to Colonel Estcourt's staff.

Besides these officers, several non-commissioned officers and privates of the Royal Sappers and Miners were sent out from England, to assist in running the lines; they rendered very material service in making the survey.

As my service in the Commission did not commence until after the first year's operations in the field, I am unable to afford information of the first portion of this survey.

I joined the Commission in March, 1843, at the time when Capt. Robinson and Lieut. Pipon were running what was generally called the sixty-four mile line. This section of the boundary, which is a perfectly straight line, is run between the before mentioned points upon the north-west branch of the river St. John, and on the River St. Francis. These points having been precisely ascertained from astronomical observations taken by the Engineers Officers above alluded to, the mode of connecting the two points was thus proceeded with.

The distance to be run between them was 64 miles, but the country at the north-eastern end of the line was intersected by several lofty spurs put out by the high range of hills which separate the waters of the St. John from those of the St. Lawrence; in consequence, no signal could be observed from either end to guide the direction of the line to be run between these two points. It was therefore arranged that the line should be started simultaneously from each end (the angle of departure having been previously calculated for,) with the expectation that the cutting parties would meet about midway.

Capt. Robinson took up his station on a fixed point on the line upon Sugar-Loaf Hill; from this station he had a view of the country in a north-eastern direction for upwards of 30 miles, and also had a back view for 6 miles of the astronomical station upon the north-west branch of

the River St. John; at this point he erected his transit, which it was unnecessary afterwards to remove, as it commanded a view of all the hills in front for many miles. Lieut. Pepon was not equally fortunate, for, on account of the short distances between the elevated ridges at his end of the line, it became necessary frequently to change the position of his instrument.

A set of preconcerted signals was agreed upon, to be made with rockets and blue lights. Mr. Scott (the present Lieut. Governor of Labuan, a gentleman of great energy and scientific attainments,) undertook to run the line through with a theodolite by day, and he was to be put in line at night by Capt. Robinson from his transit station. The manner in which this was done was simple but effectual. Signals by flashes of gunpowder were made every night at the hour of nine. Mr. Scott having previously made a clearance, and erected a platform stage on the line crossing the summit of the nearest hill, showed a large torch, formed from the bark of the white birch, which could be seen at a much greater distance than either rockets or blue lights. On the signal being perceived by Capt. Robinson, he flashed three charges of powder in succession at the interval of one minute, which was the signal, Are you ready? Three flashes in return was an affirmative, two a negative. These preliminaries arranged, the torch light remaining in the centre of the line run during the day with the theolodite, the signals then were; one flash, too much to the right; two flashes, too far to the left; three flashes, nearly right; four, in line; which, if understood, was answered by four flashes in return.—By this arrangement the day's work was checked, and errors corrected.

After Mr. Scott had run his line about forty miles, much anxiety was felt with regard to Lieut. Pipon's party, of

whom no intelligence had been received or sign seen; but to the delight of all, next morning, on the ridge of the opposite hill, and apparently in a direct line, the trees were seen to fall, and Lieut. Pipon's men appeared from the crest of the hill, now sufficiently cleared to show an opening in the forest.

The two lines had been beautifully run, the distance between them being but 300 feet, or 219 feet had they met midway. This error having been rectified, the line was corrected by the returning parties, and afterwards cut out 30 feet wide.

When it is considered that there are no two observers but will differ in a few feet in fixing the exact latitude of any particular spot of ground, and when it is known that a few seconds of error in the angle of departure to strike a certain latitude 64 miles off would make a very material difference in that distance, it will be at once seen with what carefulness and accuracy this delicate work was performed by the Engineer Officers before alluded to.

Approaching the completion of this work, the season became far advanced towards spring; the thaw had suddenly set in, and the greatest exertion was necessary to complete the running of the line before the breaking up of several of the large tributaries of the St. John, which it crosses.

The day after my arrival at Colonel Estcourt's camp, I was dispatched with a party to Mr. Scott's assistance, with provisions. The party consisted of Canadians, just engaged, and unaccustomed to hardships; so that before four miles of the journey had been accomplished one-third of them returned to the camp, and were discharged. They were all heavily laden; the road was embarrassed with fallen trees, and the mountain streams had forced the ice, and were descending in foaming torrents. Our

destination was but 12 miles off, to reach a relief party on the banks of Black River; and some idea may be formed of the difficulty of the route, as it took nearly four days to perform this short journey, for the snow was still deep, and too wet and soft for snow-shoes. On arriving at Black River, a stream about the size of the Jacques Cartier, we found it broken up, and the ice rapidly descending. The relief party had arrived at the opposite side, and the question was, how to get the provisions across which were so urgently wanted by the surveying party ahead. No raft or canoe could have lived an instant amongst such rapids, filled with broken masses of ice. Proceeding for half a mile up the river, I observed a sharp angle in it just at the head of a rapid, in the middle of which was a large rock; on the opposite shore was growing a magnificent pine tree partly overhanging the stream. With some difficulty I prevailed upon the men on the other side to cut down the tree, which fell with a fearful crash, and then floated heavily down, and fortunately jammed across the large rock at the head of the rapid. No time was to be lost, it might remain there for a day, or part in an instant. The tree, although a very large pine, did not reach across the river; there was still a distance of about forty feet on each side to reach the top and butt; the connection was easily performed on the other side, as the water was not so rapid, but it became a difficult matter to bridge from the shore on which I was standing to the top of the tree, as the water was deep and strong, and the bank high: several trees were cut down for that purpose, but although they reached the top of the pine, the rapidity fo the stream carried them instantly away. Having a sufficiency of rope I ordered the branches to be lopped off a lofty spruce, to the top of which the rope was tied, and carried [illegible]m; the

butt was also firmly secured, so that the tree when felled, having no branches to offer resistence to the water, was easily secured by the rope from the top; but none of the party would venture to cross on this single spar, until I had first of all lashed it firmly to the pine: a few light spars were then passed over, which completed the communication. Jean Busier, one of the party on the opposite side now crossed over, and I was glad to find that he was one of Sir George Simpson's old voyageurs. As the tree was curved, the river flowed over its centre to the depth of at least two feet, yet no less than twenty heavy loads did this intrepid Canadian carry over himself. The provisions now across, a rope was passed round barked trees on each side in order to afford a means of communication should the bridge be carried away: scarcely had this been effected, when a mass of ice the whole breadth of the stream came down, the ropes broke like threads and the bridge disappeared. This was my first taste of bush life.

On the completion of the cutting out of this line, the other portion, a straight line also, between the north-west and south branches of the River St. John, was run much in a similar manner, and the cutting out of these two lines completed the operations in the field on this portion of the boundary for 1843.

In the meantime, large surveying parties, under Capt. Broughton, R. E., and Mr. Featherstonhaugh, had been dispatched to the height of land, to ascertain the position of the dividing ridge between the head waters of the south branch of the River St. John, and Hall's Stream, one of the head waters of the Connecticut. This ridge was to form the boundary.

The following was the method adopted:

Certain summits on the dividing ridge having been

correctly ascertained; guide lines, cut out six feet wide, were run in the direction of the supposed boundary. The line of boundary could often be correctly traced from views obtained from the cleared summits of some of the lofty mountains on the line. These guide lines, by cutting the sources of streams flowing either into the St. Lawrence or into the sea, at once showed on which side of them the actual boundary lay. Wherever a stream was intersected by this line, its course was traversed up and chained, and the angles taken with a prismatic compass. On reaching the source of the stream the traverse was continued on over the height of land, until waters were struck running in the opposite direction; and on the highest point of land between these streams was placed a summit post, and numbered. If no stream was cut by the guide line within the distance of a mile, an offset was sent off, crossing the dividing ridge, until it struck a stream running the other side, and on the highest land between was fixed the summit. Thus, along this highland range, was the actual height of land determined.

The highest points of the dividing ridge having been ascertained, and marked with summit posts within half a mile of each other on an average, the dividing line between them was easily traced. This was usually performed by sending a man in advance until he struck the offiset line leading to the summit. On arriving there he blew a horn, which in calm weather could be heard at the distance of a mile. The height of land was then traced by an officer of the party in the direction of the sound, and the trees along it well blazed. Sending a man ahead to blow a horn at the next summit post was a very necessary precaution, as many of the spurs put out from this dividing chain of hills were more lofty, and bore

more the appearance of the actual crest separating the waters of the two countries, than the true dividing ridge.

On reaching the head waters of the most westernmost branch of the Connecticut, "Hall's Stream," this brook forms the boundary until it reaches the 45th parallel of north latitude, a point which had been previously ascertained by Major Graham, of the American Topographical Engineers. Here he had constructed a temporary observatory, furnished with very superior instruments.

The parallel of 45° is then the boundary. It crosses the River Champlain at Rouses' Point, and strikes the St. Lawrence at St. Regis.

In running the line along this parallel, which runs principally through a settled country, the labor became comparatively light when compared with the first portions of the survey. The angles of deflection having been ascertained, they were simply connected by straight lines.

The boundary having been determined and cut out, iron boundary posts or monuments were afterwards placed along it, marking the most prominent points. On the straight sections of the boundary an iron monument was placed at distances of a mile apart, and one on each side of every river crossed by the line. Where rivers formed the boundary, monuments were placed on each bank, just above the confluence of any other stream, so as to indicate the true river. On the height of land, monuments were placed upon the summit of every hill, and on the highest points in the valleys; also, at any intervening distances where the dividing ridge appeared doubtful. The parallel of 45° was marked by monuments placed at every mile, and a monument placed anglewise to indicate the angles of deflection on the line. Monuments were also fixed upon the road sides.

At all the principal points upon the boundary, viz:—

St. Croix, the commencement and termination of the north line, the north-eastern and southwestern ends of the 64 mile line, at the point where the 19 mile line strikes the south branch of the River St. John, at each end of the height of land, and also at each end of the parallel of 45° and at all important positions between these places, large iron monuments 8 feet high, were placed.

These monument were of cast iron, and hollow, and made something in the form of an obelisk; they had a flange 3 inches wide at the base; and were all obtained by contract from the United States. The small ones were cast in one piece about 6 feet long, and weighed 194 lbs. each. The large monuments were cast in three pieces, and weighed, when put together, about 300 lbs. Inscribed upon their sides were the date of the treaty, and the names of the Commissioners under whom the line was run.

The mode of placing these monuments was by sinking them three feet into the ground, and firmly securing them in position. In swampy ground, a tamarac post was driven deep into the swamp, the monument was then let down upon the post. In very rocky places, where it became necessary to put a post, holes were drilled through the flange at its base, and it was then secured to the rock by fox wedges.

The distributing of these iron boundary posts along the line was perhaps one of the most arduous duties throughout the whole survey. The remote distance of many portions of the boundary from any road, or even water communication, rendered it necessary for them to be drawn many miles upon toboggins over the snow in winter; and the placing of them along the rocky and almost inaccessible mountain ridges was very ably performed by Mr. Morin, of Maskinongé, a person who had

been strongly recommended to Col. Estcourt by that celebrated traveller, Sir George Simpson.

To give some idea of the difficulties encountered in distributing these monuments, I mention the following as forming one of the many instances of similar hardships and difficulties that had to be overcome: I was directed by the British Commissioner, in the month of February, to proceed to St. Thomas, there to engage horses and sleigh, and proceed to Lake Ishagelnashagook by a bush road running 45 miles south of the place, and from thence to endeavour to convey a number of these iron monuments up the River St. John to its extreme source. The first portion of the boundary over which I had to pass had not been travelled over during the winter, and the snow lay there five feet deep, through which, with horses, in sleighs, the monuments had to be drawn. To break a passage through the snow was absolutely necessary: to effect this, the drivers had first of all to proceed in advance on snow shoes, two of the sleighs had then to be abandoned, and the unincumbered horses sent through the snow. Sometimes these unfortunate animals would entirely disappear in some hollow where the snow lay deep, and had fairly to be dug out. The time required to break through this road occupied nearly four days, so that we were unable to advance at a greater rate than six miles a day. It enabled us, however, to get the remainder of the monuments through to the river without further difficulty. Still, upwards of 64 miles further had to be accomplished up the stream; fortunately the wind had drifted the snow off the frozen river, so that very little difficulty was met with in ascending it, until we reached the narrows, at the rapids, near the height of land: here frequent portages had to be made to avoid the rapids, and on ascending higher up, the stream grew smaller, until

the alders met on each side. These had to be cleared away with the axe.

The owners of the horses had contracted to furnish their own forage, but in spite of remonstrances, they could not be prevailed upon to take sufficient: they little knew the journey they had undertaken to perform. On arriving at the source of the river their forage was nearly expended, and they had yet 131 miles to return through the forest ere their homes could be reached at St. Thomas. The snow was falling fast, so that every hour of delay was hazardous. Of provisions for the men there was no scarcity; an effort, therefore, was necessary to save the horses. We arrived at our destination at 12 o'clock, noon: allowing no time to rest, but just sufficient for the animals to feed; I pushed them on with their empty sleighs over the now beaten track; all that day did they travel and the next night, then, through the darkness, I was obliged to lead the way, accompanied by my servant, to point out the dangerous air-holes in the river, in one of which I nearly lost my life. Towards 3 o'clock, A. M., the wearied party halted, and declared their intention to proceed no further. The snow had fallen during the night and had been succeeded by a cold freezing wind, which swept down the lonely valley of the river, and the men, chilled and tired, now determined to look only to themselves, commenced to make a fire, and abandoned their horses to their fate. The depôt containing provisions was but five miles off, and once there, shelter and food could be obtained for both man and beast. It must have been 10 below zero, so that in a very short time their horses, dripping with perspiration, must inevitably have been frozen to death. Finding remonstrances in vain, I tried the effect of fear, and feigned to leave them to their fate; hardly was I out of sight round a turn in

the river, when their shouts reached my ear, and I was soon overtaken by their poor jaded horses pushed to the utmost of their speed by their frightened masters. We arrived at the depôt without further difficulty, where we found plenty of biscuits, upon which, when broken, the animals fed greedily.

The party arrived safe at St. Thomas, and instantly commenced a suit against me for damages; but as they had doubly earned their money, Col. Estcourt allowed them, upon my recommendation, twice the amount of their contract.

At one time, as many as five hundred men were employed by the British Commissioner alone, in cutting out and surveying the line, and carrying and boating provisions. Some of these men were engaged on the surveys of the innumerable little streams which flow from the water sheds of the highland range; others were assisting the Engineer Officers in making contours of the boundary line; large parties were employed in chopping out the line 30 feet wide, and clearing out a road six feet in breadth through its centre; and large bodies of men were required constantly to be engaged in keeping up the supply of provisions at the various depôts.

The choppers were all divided into gangs of ten, and over each gang was placed a working foreman, who received higher wages than the rest; he was made responsible for the conduct of those under him. The average wages per man was £3 10s. a month, and food. To every gang of men was allotted a lean-to tent and cooking utensils: as these tents were open in front, generally two gangs camped opposite to each other with a fire between them; and in winter, each man in his turn had his night watch, to see to the keeping up of the fires. They generally relieved each other every two hours, and

from this arrangement much comfort was derived. Few sights at night in the bush are more remarkably interesting than a number of tents pitched upon the banks of a river and viewed from its opposite shore.

The supplying of provisions to a large body of men formed one of the most expensive items in the whole survey. They had to be conveyed up the River St. John in canoes and pirogues, and from thence up such tributaries as crossed the line on which depôts had to be constructed to receive them. In many places provisions had to be carried in pack loads for 45 miles through a heavy and mountainous country, so that one-half was consumed by the carrying parties in going and returning. The allowance of provisions to the men upon this arduous duty was very liberal. At first they were allowed certain rations, but it was not found to answer, as men when undergoing great muscular exertion will consume double the quantity of food usually allowed to soldiers of the line. The usual provisions were pork, flour, biscuit, peas, rice, sugar, tea and vinegar. The latter as an antidote to scurvy, although I am not aware of any case appearing amongst the men. Cases of snow-blindness often occurred, which soon gave way to change of air and diet. The men thus affected saw perfectly well during the day time, but had, towards evening, to be led back to camp, where they recovered their sight before the light of the fire. As a proof of the healthiness of bush life, I may mention, that although some of the men received severe and dangerous axe wounds, many got frozen, and all were exposed to severe hardships, no case of death happened in the forest out of the 400 and 500 men who for three years were there annually employed.

With regard to the value of a large portion of the disputed territory, little can be said in its favor for agricul-

tural purposes; and very little good soil is to be found in any extent upon either side of the boundary between Lake Pohenagamuck and Hall's Stream. The mountain ranges, however, are well worth the researches of the geologist, particularly in the neighbourhood of Arnold's Mountain, which lies to the south-west of Lake Megantic.

The lumber in this disputed portion of country must have been considered very valuable to the Americans, as I have since learnt that the whole was soon disposed of to companies and to private individuals, who now carry on there an extensive manufacturing business.

It might have been expected that a numerous body of men continually crossing over an extensive range of forest hitherto untraversed by the foot of man—save along the river sides and lakes, where annually the Indian at stated periods hunts and fishes—would have seen many wild animals, Such, however, was not the case; the tenants of these wild forests are not so numerous as generally supposed. During nearly three years sojourn in the very heart of the bush, and travelling often whole days alone, I have no marvellous story to relate. A bear and a few moose deer were all the animals I ever met with. Such as do exist in Lower Canada, seldom attack a man, unless in self-defence, or in defence of their offspring. Some few adventures, however, did occur:

One cold morning in the month of March, Mr. Scott was in the act of tying on his snow shoes in front of his tent, before which was burning a strong maple fire; on looking up, he saw, within a few feet of where he stood, a fierce loup-cervier. Hardly had he time to think how to act, when the beast was perceived by his little terrier, who boldly attacked it; the loup-cervier, coward-like, fled, but the softness of the snow and the sudden attack of the dog impeded its movements, and it was soon dispatched by

the blow of an axe thrown at him with deadly precision by one of the choppers. The beast was almost skin and bone, very old, and covered with vermin; hunger alone had driven it to seek for food in an enemy's camp.

On another occasion, a species of wild cat was perceived by a corporal of sappers, and his party; it was, when seen, in the act of crossing the line. As the snow was soft the animal immediately treed, and was followed by the dauntless corporal, who, however, nigh paid dearly for his temerity. The corporal was almost as great an adept in climbing as the animal he was in pursuit of. He followed it closely to within about a dozen feet of the top of the tall spruce; the party standing some feet from the foot of the tree had a good view of the movements of both the attacked and the attacker: the latter was often obliged to take his eyes off the animal in order to secure his footing, and the cat could be observed lashing its tail and preparing for a deadly spring upon the now apparently devoted corporal. Hardly was he warned of his danger when the infuriated beast sprung full at his neck; but the drop was too perpendicular for effect; with a short stick he struck if sufficiently hard to clear him from its clutch, and it came tumbling down in a succession of summersets, at least from 100 feet into the deep snow, and was soon dispatched.

A very exciting scene I once witnessed: it was an attack upon a large bull moose, which was surrounded by a party of about 70 men. They were changing camp that morning, when the foremost of the party espied on the open line a large bull in company with five female deer. The man immediately returned and informed his companions of what he had seen, and steps were soon taken to surround the herd. It is a common practice, and performed by a large party of men extending themselves

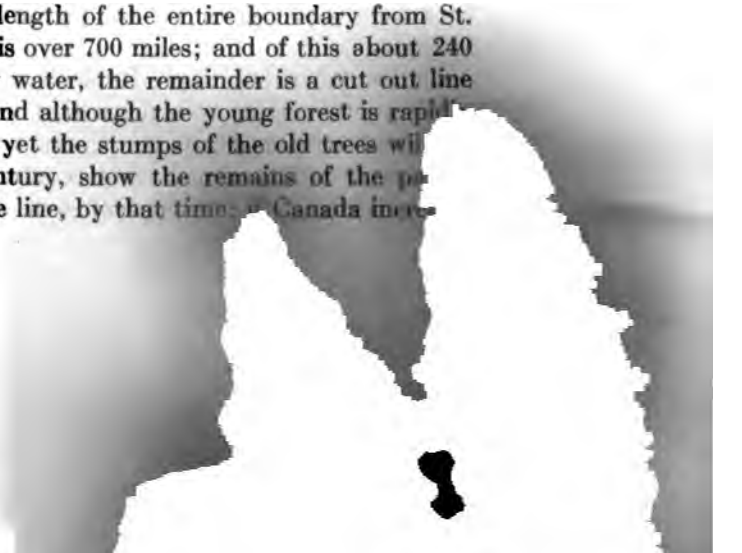
in a circle around the object of their attack, and gradually decreasing its circumference so as to prevent almost the possibility of escape without running the gauntlet. It was soon perceived that the most timid of the herd had fled upon the first alarm, but the gallant male had nobly disdained to retreat, and seemed quite prepared to do battle with his foes. He had left the open line, and was about 100 yards in the bush when he perceived one of the party, towards whom he boldly advanced with a menacing air; but perceiving in every direction enemies around, he stopped short, seemed bewildered, and trotted wildly about, seeking for an opening to escape; but every moment of hesitation limited this chance; the circle of his attackers became smaller and smaller; all at once he stopped, and boldly awaited the attack of his foes. There was one man amongst the party, a French Canadian, whose intellect was considered rather unsound: this fellow was ever seeking for an opportunity to perform some act that would gain him éclât with his comrades. He was a powerfully built young man, and remarkably active; here then was an opportunity he had long sought for, and a general cry was raised for him to commence the attack: he was no coward, and at once stepped forward to do battle, single-handed, with the powerful animal before him. Choosing a position between two trees, through which he knew the moose could not pass, he stealthily approached his rear, but the wary animal perceived the danger; wheeling suddenly round with a terrific roar he rushed upon him: well was it then for Clutier that his position was so well chosen or he would have been trampled to death in an instant, for the moose in endeavoring to reach him through the two trees got his large horns entangled, and before he could extricate himself, his attacker flew around and ham-strung him

with a single blow of his axe; with a second blow he almost severed the other leg from the body, and the noble deer sank upon his haunches and meekly met his fate.

I shall not soon forget the effect of this scene upon Clutier; for that day and part of the next he was perfectly mad. So soon as the moose fell he drew his knife across its throat, and catching the flowing blood in his hands he actually drank it hot and reeking as it ebbed from the expiring animal. The moose was an immense beast and weighed over 1200 lbs.; his flesh, although coarse and rank in flavor, turned out very acceptable to men who had been subsisting for months upon salt provisions. The horns weighed 56 lbs., and were the finest I had ever seen, they were sent by me as a present to Capt. Broughton. The interior of the forests, however, of Lower Canada, afford but little game for the sportsman. The partridges and hares are found in greatest quantities on the outskirts of the bush. The beaver, martin, muskrat, &c., can only be obtained by trapping.

The lakes and rivers every where in this section of country abound with trout of the finest description;—the fish on the Canada side are the best. In Lake Megantic trouts are caught weighing from 26 to 30 pounds. Many varieties of fish exist in these waters.

In the fall of 1845, the whole line having been cut out and surveyed, the two Commissioners proceeded to Washington, where the plans of the boundary were made and signed. The length of the entire boundary from St. Croix to St. Regis is over 700 miles; and of this about 240 miles is formed by water, the remainder is a cut out line 30 feet in width, and although the young forest is rapidly filling up the gap, yet the stumps of the old trees will for at least half a century, show the remains of the posts stock and mark the line, by that time [illegible] Canada inva-



in population as it has done of late, the greater portion of the country on either side will have become settled and populous districts. Some idea may be formed of the extent of the work performed in this duty from the following calculation, viz: that no less than 3,400 superficial acres were cleared in cutting out the line, and 1,000,000 trees, large and small, felled by the axe. The length of bush lines cut out by both Governments in traversing up the streams and making the survey is over 10,000 miles, and the cost of surveying and cutting out this boundary, to the English Government alone, exceeded £80,000 sterling.

In the performance of this duty the greatest unanimity existed between the English and American Commissioner, as well as between the officers and men of both parties. The Americans performed a distinct survey, ran their own trial lines, and verified all the work performed by us. Certain portions of the line were alotted to be cut out by them, and the expense of the iron boundary posts was borne equally by each country. In every other case, I believe, each Government paid its own expenses.

Ten years have now passed away since the completion of this survey, and I can safely say that all of those engaged thereon but regretted the termination of the Commission, on account of the social enjoyment produced by being associated in labors with gentlemen whose aim and study was to be kind and friendly to each other, and to render the duties to be performed agreeable and pleasant.

On the return of Capt. Robinson to England he was made a Brevet Major; a promotion well merited for the important services he rendered, and which was the more complimentary, inasmuch that, contrary to the general rule of the army; a precedent was made in his favor,

brevet rank being only given to junior officers for distinguished services on the field of battle.

Lieut. Pipon, who was greatly esteemed by all who knew him, was appointed to take charge of the survey for the Halifax road: in endeavoring to save the life of a fellow creature in the waters of the Madawaska, he lost his own.

Mr. Scott, the Secretary to the Commission; for the arduous and various services performed by him, was, on his return home, appointed Surveyor General of the Island of Labuan, and has since been promoted to the Lieut. Governorship of the place, a position which he still retains.

And may I not here pay a slight tribute of respect to the memory of the British Commissioner under whom we served, that noble-hearted officer, the late Major General Estcourt?

There are many in this city, perhaps some in this room, to whom he was well and intimately known. High and honorable in his feelings, kind and affable to all, of strict religious principles; he was esteemed and loved by all who knew him. No man ever made a more conscientious discharge of his duties than this officer. He particularly distinguished himself in the Euphrates Expedition, and owed the prominent positions he held in after life entirely to his own exertions. He lies entombed amidst the graves of heroes.

There have been those who have endeavored to blast the fair fame of many a gallant officer in the Crimea. Had they known the difficulties they had to encounter, had they known how the hands of those officers were tied up, and how their demands and representations had been unheeded, very different would have been their feelings. Of those of whom it was attempted to impute blame,

General Estcourt was amongst the number; but the calumnies have recoiled upon the calumniators; and when the din of war is hushed, and the blessings of peace again flow through the nations of the earth, history will do justice to the memory of those brave and indefatigable officers, they—who were in fact the pioneers—who had to cut their way through a Gordian knot of red tape routine and useless forms, and who cleared a path for others to pass through, and reap the glory.

TRANSACTIONS

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Article I.—Notes of a Journey Across the Andes, in Peru.—*By E. D. Ashe, Lieutenant, R. N., F. R. A. S.*

[Read before the Society, 3rd April, 1861.]

It has been my good fortune never to have sailed in an uncomfortable vessel; but the frigate that I belonged to when I crossed the Andes, had a rare combination of those elements requisite to make a happy ship.

In the first place, we had an excellent captain: and in the next, my messmates were composed of some of the best fellows in H.M. service. We all had our own peculiar line. There was no jarring or clashing amongst us. One sang an excellent song; another told a capital yarn; a third played the violin, another the flute; a fourth played tricks upon cards, so that frequently those who have dined on board have found cards in their boots weeks afterwards. We had an inimitable Irishman, who made delicious bulls. Besides all this, we had a very good band, one of the greatest comforts on board a ship, the master of which said band was a talented creature, but alas! he was too fond of sucking the monkey,—he drank. I had once occasion to speak to him, and plainly told him, "Why, you are drunk, sir." He looked

at me with a fishy eye and replied, "Well, sir, I know I am; but not more so than a good musician ought to be." And lastly, our store rooms were well supplied with the choicest wines.

Just before leaving England, a lighter came round from the Thames; and as she was being cleared, case after case was hoisted in, and the whole forenoon elapsed before she was sent away. On going to take leave of my friends, an old boatman, who was pulling me ashore, remarked to me in that free and easy way common to him as he knew his company, "Ah, sir, that will be a 'appy ship. I never seed so much licker go aboard a ship afore in my life." And certainly she was, albeit he was out in his reasoning though not in his reckoning.

As this happy ship was lying in Arica roadstead on the coast of Peru, several parties were formed to visit Tacna, a pretty Spanish town, containing about 7,000 inhabitants, situated in a fertile spot, watered by a rivulet formed by the melting snow of the Cordillera,—for wherever there is a moisture there the ground is covered with the richest verdure, and as it never rains in Peru, the coast presents nothing but a sandy desert, saving and excepting in the immediate vicinity of these mountain streams.

One party had returned from the place, and I

made up my mind to form one of another that was just about to start, and accordingly sallied on shore to find a mule that had some skin on its back. Arica is the seaport of Tacna, but roads and vehicles being in those days unknown, everything was carried on the backs of mules, a distance of forty miles across a desert, without a single drop of water or a blade of grass to cheer the way. It is truly marvellous how muleteers manage to secure some of the things which these animals have to carry on their backs, for the packages are of all sizes and shapes from a Collard and Collard pianoforte to a case of wine. The consequence of this state of affairs is, that from his first journey until his last, the poor mule has always a raw and bleeding back. No wonder that the track across this desert might generally be found by the skeletons of these poor animals.

I have often thought that if there is any truth in the theory of the transmigration of souls, great must that sinner be who has to expiate his crimes in the body of an Arica mule.

Our party started about eight in the morning, in high glee, and as the sun in the course of the day became nearly vertical, the only shadow each of us had was that of his sombrero; but to prevent our faces from being blistered and losing all our good looks, we took the precaution to cover them with silk handkerchiefs.

About noon we halted among some rocks that made their appearance above the sand at a distance of fifteen miles from Arica; and here we had recourse to the last of our moistening store that we had provided for the journey. Thus freshened up, we again started, but our party had lost their fun and frolic, too much had been taken out of us already. And, alas, so it was with our animals as well as ourselves; for, sad to relate, about four in the afternoon my mule showed symptoms of breaking down; and I persuaded the party not to think of me, but to go on ahead, and should they reach the place of destination to send back help.

Accordingly I was left, and the party out of sight, I endeavoured to urge my poor brute forward with all the power I had; but in vain; not even the muleteer's words,—"Caramba! cari carajo, maldita!" had any effect: he drooped his head as a signal for me to dismount. This done, I began to speculate on our condition as to which was the greater ass, the mule or I. But as I could not afford to pay for mule and saddle, I managed to urge the poor animal before me, so that at least when he drooped I should only have to saddle myself. Matters now were becoming serious. It aso evident that I was in a scrape. A loose burning sand around us, my temples throbbing from heat and exhaustion and intense thirst, and having

to drive a poor sinking mule before me,—and yet not a hundred yards from me I thought that I could see a beautiful lake, and even the banks on the opposite side; nay, I could even see the ripple on the water. Alas, what delusion!—this was only the effect of mirage, and I knew that instead of water I should find nothing but burning sand. In fact, if I had not kept myself up by remembering that my messmates would surely send help, I certainly should have sat down on the next skeleton of a mule among the many that mark the road, and added to its bones those of two other asses! A multitude of such thoughts crowded on my mind even including this termination of the journey, when happily my reveries were broken by the sound of bells; and on looking up I beheld a man on a mule coming on at a brisk trot, leading a horse. What relief this was I need not say. Often had I exclaimed, in despair of ever seeing it, —"Oh, give me but my Arab steed!" but here was a steed as good for me as any Arabian. Soon, indeed, I was on his back, and with a good ambling speed in a short time he bore me in safety to the hospitable door of the English Consulate.

A warm bath, a slight stimulant, and I was ready for dinner at eight. The consul was as considerate as kind, he had invited all the beauty, and some of the principal merchants of the place

to meet us. What a change had a few hours made in my condition. Here I was enjoying the cool breeze as it was rustling amongst the leaves of adjacent trees, delicious claret, the most luscious fruit, and the sweet voices of charming ladies. No wonder that sailors are always in love. But time, as usual, always flying faster the happier we are, stole away a delightful evening sooner than he should have done, and those who could not be accommodated at the consulate were billeted off with the different merchants. It fell to the lot of a young German to receive me, and I was most fortunate in having a companion who had the musical talent of his country, with all the information of an European traveller.

On the following morning, having found my way to the consulate, while waiting for some of my companions, a handsome young man entered my room, and it soon appeared in our conversation that his visit was to take his farewell of the consul, being about to cross the Andes. "Cross the Andes!" I exclaimed; "how much I should like to accompany you." "I really wish you would," he replied; "for a companion on such an occasion is truly most desirable." At this moment the consul joined us, and hearing our conversation, remarked, "Why don't you go with Mr. Fernandez? He is going to Puno, situated on Lake Tetic-

ca, where the first Inca, Manco Capac, made his appearance. How could I resist, although there were certainly difficulties to overcome! In the first place, my leave of absence was but for a week, and I could not possibly return under a fortnight; in the next, I was totally unprepared for such a journey; and then, too, my friend started in two hours.

Well, it is often truly said, "where there's a will there's a way," and so it was on this occasion. The first difficulty was got over by a line to the senior lieutenant, informing him that as time did not admit of an answer it was useless to apply to the captain of the ship for leave, but that I should take the responsibility upon myself, as I was sure that he would only be too glad that one of his officers should take advantage of so rare an opportunity of seeing the country.

This being concluded, I rejoined my German friend, and quickly informed him of my new determination. At which he observed,—"You sailors are odd fish; but I can assist you, as I am about to purchase a very fine mule for the use of the house, and I beg you will take it for your journey," adding, "you have no time to lose, so come along with me and I'll get you a fit out." Nothing was to be bought ready made here, so he soon introduced me to a friend, and it was agreed before-hand

that I was to ask him to lend me his "breeches." I am not a very bashful man, but the very idea of asking a person that one has never seen before, for his "breeches," in order that one might live in them for the next fortnight, required more assurance than I could muster. But my good friend, the German, came to the rescue, and as nothing but leather could stand all the work I should have to go through, in an unguarded moment I popped the question; the friend in need (I forget his name) relieved me at once; he rather liked the idea, and brought them forth immediately, saying, that I should find them *very comfortable;* on which I took them under my arm, and beat a retreat, giving him no time to finish his apologies about a button that was off.

After this feat, the remainder of my outfit necessary for the cruise, was borrowed without a moment's hesitation by merely asking, so easy is it to get on after a beginning is once made,—indeed, as Fernandez and I loaded with botas, spurs, bridles, alforcas, ponchos, and breeches, returned to my quarters, I almost considered them my own property. However, we found lunch ready, and having accomplished his object, he left me with the promise that he would call for me in an hour. Of course I made a dinner of my lunch, and then retired to dress for the occasion. I found the "con-

tinuations" most comfortable ; and when I made my appearance before my worthy host, the consul, armed cap-a-pie for the journey, I really believe that I was equipped as if I were going on the stage to act the part of a brigand.

However, everything was ready, and at two, p.m, on February 16th, 1845, our party started ; consisting of a muleteer in charge, Fernandez and myself, with a baggage mule, and a horse that was going to be sold.

We had a most interesting journey before us. There was something exhilirating in the unexpected manner in which I had undertaken it ; young as I was, in the morning of life to start thus on an expedition where no danger or difficulty beset the way, nothing to check the ardour it inspired, was delicious. I was ready for any difficulty, to do anything ; but, alas, how different is the case when the shadows of life lengthen ! when you know that your brave, gallant messmates have dropped one by one from your side, and there is not a part of the globe in which you have not left some companion of your youth, in a lonely grave, far away from family ties ! you look back on those days, and memory lingers over the picture, loth to leave it until some unlooked for incident sweeps all away.

On glancing at my pencil notes whilst on the

back of a mule, I have recovered scenes and faces that were fast slipping away from my memory It is like cleaning up an old oil painting, defaced by time, when the softest lights of the landscape are again brought forth.

The Andes, on the Pacific side, rise abruptly from the sea coast, whilst they slope on the Atlantic gradually down to the pampas, broken by plateaux. Immediately on leaving Tacna we commenced the ascent, gradually at first, until we reached a small village,—the name of which is as unimportant as itself,—about twenty miles distant. Here we stopped for the night, in a cottage next to the church, and the Padre soon joined our company. But supper over, Fernandez prepared his bed, which he brought with him in a waterproof case, kindly offering me half of it. Our muleteer coiled himself away in a corner, amidst bridles and saddles, and covered himself up with his poncho, and we were all of us soon sound asleep, notwithstanding that some dogs were howling in a more melancholy tone than is usual with such brutes in moonlight.

Long before it was daylight, the jingling of bells, and the noise of feeding the mules, told me it was time to get up ; and after a rapid breakfast, our party was *en route* at half past five, a.m. We now were fairly at the foot of the Andes ; our road—if

it must be called a road—was simply a dry water-course, up which the mules scrambled, and then along the sides of small hills that formed spurs to the great Cordillera, until another dry water-course was gained ; and in this manner did we toil until half past ten, a.m., when we reached Palca, an Indian village, situated in a ravine, about twenty-four miles from where we had slept.

Here is a church built by the Jesuits, but not in use now, and surrounded by a few huts. As all the mules to and from the interior pass here, the Indians make a livelihood by selling alfafa, (a kind of clover,) that grows in this valley which is watered by a rivulet. During our morning's ride we saw but little vegetation, and that only where some mountain rill moistened the surface, everywhere else the ground was dry and barren, and covered with stones. The thermometer ranged during the day from 64° to 60° ; and at Palca water boils at 183° Far., giving a height of 10,515 feet. (See process at the end of article.)

Arrived here, both man and beast were tired, and we enjoyed ourselves in this agreeable temperature exposed to the sun. Of course I availed myself of the opportunity to visit some of those towers seated on the summits of the principal hills that command a view of the setting sun. They are about eight feet square, and twenty in height,

composed of dry clay bricks mixed with straw; they had been previously opened for the purpose of obtaining the gold ornaments generally found upon the corpse of the chief, buried in them, placed in a sitting position, facing the setting sun.

Our muleteer, who served also in the office of cook, prepared our meals; which generally consisted of an *olla podrida*, formed of onions, potatoes, mutton, and beans; but at this height he could not get the water hot enough to break the potatoes or boil the meat, and as none of us thought of fastening the lid on the saucepan, and thus getting high pressure steam, we had to eat raw potatoes and parboiled meat.

As our next day's journey was considered the most severe, we very early retired to rest. Shortly after five on the following morning our party was up and moving. I had concluded that after scrambling up water-courses and passing along the brinks of precipices on the previous day, we had surmounted most of the difficulties we had to encounter. But I soon found out that we had not yet commenced them; and certainly what we went through on this day confirmed the stories of them. Again we had to climb the sides of water-courses, and on reaching the tops of those mountains that appeared so lofty from below, we saw others that reared their heads still higher, and

when the summits of these were reached, still there were mountains heaped upon mountains beyond. Frequently our track lay on the edge of a precipice where one false step of the mule would have lost both the animal and his rider, mangled and lacerated by the projecting rocks, as they would fall to a depth that the eye could not fathom. It was sublime to look down from our dizzy height and follow the condor soaring mid heaven far beneath us, a mist resting upon the tops of the mountains that were passed on the previous day. But the eye soon got familiar to these lofty heights, and that nervousness that must be felt by all who are placed in such a position for the first time, soon wears off.

The cactus and a rush, with two or three kinds of mosses, compose the scanty vegetation. We passed two or three droves of llamas, about fifty animals in each drove, laden with cases; they have no harness on, and the boxes are secured to their backs by a rope that passes round the body: they carry about 130lb. The Indian who drives them has a sling, and these nimble animals instead of keeping together are scattered on either side amongst the rocks, like goats, feeding on what they can pick up on their way. When any one lags behind or gets too far from the others, the Indian slings a stone at him, taking care not to

hit him, as he would probably break his slender legs; but the stone drops just behind or between his legs, and the animal comes scampering down to the rest; and in this manner by sling and stone, does he keep subordination in the flock. When he wants to unload for the night, he gets them together by calling, and then passes a string round all their legs and ties them in a bundle, where they remain until they are unloaded. They are then set loose to get their supper where best they can; in the morning they are called, tied, and then loaded.

At noon of the third day we were about the highest part of the pass, and at the perpetual snow line. The sun was at its meridian height and nearly vertical. Numerous streams were running from the sides of the snowy peaks that were on either side. And as we looked eastward what a scene of desolation met the eye; instead of the frightful precipices of the Pacific side, there were plains covered with loose stones, all of which had been thrown from volcanoes, and varied in size from large masses of many tons weight to small fragments. The ground was completely covered, and the road had been formed by filling up and levelling, by placing the smaller stones between the larger, and after all that trouble it is but a very rugged one. As far as the eye could reach were

snow-capped mountains, most of them volcanoes, amongst which were most conspicuous the Illemani and Sorata, that rise from the centre of a plain, and reach a height of 25,000 feet. Some of the volcanoes are active, and others have slept for ages.

We halted for a short time, but the cold was intense, and we had to wrap ourselves in our ponchas and cover our feet with the wool of the alpaca that we found in a hut at a place called Tarcora, a few miles to the eastward of the pass. Here there were two or three Indian huts, built of loose stones. Not a single person was to be seen. It is principally used as a halting place, and by those Indians who hunt the vacuna. They have a very primitive way of shutting up their houses, by building up the door way with stones. Our muleteer made an entrance into one, where we sheltered ourselves from a heavy hailstorm.

I was now beginning to suffer from the siroche; my head aching, pain in the temples, and great sickness of stomach, far worse than sea sickness. I am not prepared to say what is the cause of this malady, or why ascending to a great height should produce it. Mules not unfrequently drop down dead, and sometimes man. A few months after my visit, a young Englishman was lost from this cause when on his road to Lapaz. Although I

had heard of the siroche, and was speaking about it the day before, it never occurred to me that I was then suffering from it ; no, I thought positively that I was dying. We again mounted our mules, and I was determined not to impede the party, but to ride on until I dropped from the saddle. Our road lay on the side of a mountain slightly descending, and covered with those loose stones. For twenty miles further did I sit in the saddle, thinking that each hour would be my last. Our mules were tired, the ice forming under our feet ; there was but one more hour of daylight for us, so our muleteer was now anxiously looking out for a halting place. Shortly we came to a place where there were three huts, built of loose stones, about six feet high, the roof covered with rushes. It was a very primitive affair. It could only afford one room, with a raised bank of earth at one end for a sitting or sleeping place. We found it unoccupied with the door built up ; so we let ourselves in and brought in our traps, then turned our luckless mules adrift for the night to sup as well as they could on a few rushes and a little moss.

Fernandez spread his bed on the raised seat, and the moment my spurs were off I was on my back, whilst my companions were making a fire with some rushes and the droppings of the llama that are always found in great abundance at these

halting-places. I did not join the festive board, but after supper Fernandez administered a little warm brandy and water. The water boiled at 164°, giving a height of 20,456 feet. Thermometer at noon, 52°; 2h. p.m., 58°; and at 7h. p.m, 28°.

I was alive in the morning, which was more than I had expected, but could not saddle my mule, and had to be lifted on to it. I wanted to be left behind to die, but this they would not hear of. Well, as they could bury me anywhere on the road under a heap of stones, I started. We were now about to descend upon one of those large plains that form a series of steppes until they reach the pampas; they are surrounded by the tops of mountains that look like hills from the plains. It is evident by the marks of water that they have all been lakes, until the water has found its way out by wearing a channel for itself through the rocks on the lowest side. Through the middle of each there runs a stream, that sometimes deserves the name of a river, and by the side of this stream the traveller passes through a mountain gorge from one plain to another. These gorges, or passes, are sometimes seven miles long, and the path through them is most difficult and dangerous. The mules have occasionally to be unloaded, as there is not room in some places for them to pass with any-

thing that protrudes from their sides. The sagacity shown by these animals in stopping on coming to a doubtful place is very remarkable. It frequently happens, nevertheless, that they are thrown down from great heights into the river by their loads striking against a projecting rock. On descending to the first plain I was immediately relieved from my sickness, and then it only occurred to me that I had been suffering from the siroche, which greatly relieved my mind, as I thought that I was seized with some malignant disease.

It has always been to me a more nervous work to go down a steep hill on the back of a mule than to ascend one, as in the latter case you do not see your danger, whilst in the former you have it always full before your face. In going up, one can most affectionately hug the mule round the neck; whilst in descending one is afraid even to take hold of its tail for fear it should kick, which would certainly be its last kick. Sometimes these animals will place their fore feet together and sit down on their haunches, and then quietly slide down. On these occasions you do not attempt to interfere, but quietly sit still and trust to the good sense of your mule, which is not so great an ass after all.

These higher plains have a wild grandeur about them, and for rock scenery cannot be surpassed. We toiled across these rugged basins, our mules

carefully picking their steps, until midday, when we dismounted to enjoy a slice of sausage and a biscuit, as well as to rest ourselves by lying at full length on the ground, a great relief after being many hours on the back of a mule.

A little before sunset we observed a solitary hut before us, and finding nobody at home and the door built up as usual, we quickly made an entrance, brought in our saddles, &c., made up our beds, turned our mules adrift to get their supper—which they had a better chance of doing than on the previous night, then lighted a fire and commenced preparing our evening meal. I do not smoke, but certainly I must confess that when the Ariero and Fernandez got their steam up, a pipe appeared to be an invaluable thing ; it did me good to look at them.

After supper I took a short walk and found a few inclosures for alpacas and some scanty grazing in the neighbourhood, but very little soil fit for cultivation. The thermometer when we left, at 5h. a. m., was 32°; at noon, 67 ; and at 5h. p.m., 44°. Water boiled at 179°, giving a height of 13,400 feet. After our hard day's ride we took to our rest directly after supper, and found that thirteen hours in the saddle was quite sufficient to make us sleep soundly.

We started again a little after 5h. a.m., and as

we descended each plain became more fertile, and soon we arrived at a level, where grass was permitted to grow, and then we met our old companions the buttercup and daisy. How gladly did I pick them ; nothing reminds an Englishman of home and childhood more forcibly than do these simple flowers. From the winding course of some of these streams, that are now as large as a small river, we had to cross and recross several times. Every one knows the old saying, " As stubborn as a mule." Unfortunately, on this day we had many proofs of its correctness. If the mule could not see the bottom of the stream that it had to pass, or had reason to think that it might be too soft for its weight, a scene was sure to take place. Mine was a good mule,—a very good mule, but on this one particular point it was perhaps a little too obstinate even for a mule. On arriving at a part of the river that was to be crossed, the two other mules and the horse generally went over without much difficulty, but my " ferry-boat" would put his nose close to the water and smell it ; then, with his long ears stuck forward, he would try to see the bottom through the muddy water. After giving him sufficient time to make up his mind, I used to try and persuade him with my spurs and a good stout cudgel, but they never had any effect on the brute. Poor Fernandez and the

Ariero would have to come back and place themselves one on either side, and then, inch by inch, force him over.

But, notwithstanding these drawbacks, as the day was fine and the temperature most agreeable we rather enjoyed travelling. A little before sunset we discovered a hut prettily situated near a rivulet at the entrance of a valley, and as there were llamas and alpacas grazing around it, we concluded that it was inhabited, so we dismounted and followed our Ariero, who, without the ceremony of knocking, opened the door. On entering we found a young Indian and his bride, who, it appeared he had just brought home. The muleteer could speak a little of their language, and at once told them to "Clear out." I am sorry that I do not recollect the Peruvian for this expression. However, these children of the sun quietly took the hint and gave up possession; on which we immediately took off our accoutrements, and made up three comfortable beds by spreading the wool of the alpaca and vacuna, which we found in great abundance in the hut. There was good pasturage for our mules, and for ourselves we found a forequarter of llama hanging up, which was instantly taken down and consigned to the pot for a jolly supper. Water boiled at 180°, giving a height of 12,960 feet. Thermometer at 5h. a.m., 40°; noon 64°; 5h. p.m., 52°.

Whilst the evening meal was preparing, Fernandez and the muleteer enjoyed their pipe, and I took a stroll. The scenery was very pretty : an undulating country, a great deal of cultivated land, wheat and other European grains, potatoes, and some other roots, but no timber only a few small bushes.

In the course of our ride we saw a great quantity of quail and some wild turkies, also an animal, in size and colour like a tabby cat, which they call a biscatio; but the game most prized and really valuable is the vacuna, the hair of which is so fine and soft that it is sold by the ounce ; a great many were seen in the morning. The Indians catch them by placing a quantity of sticks at some yards distance apart supporting a line with pieces of black cloth attached to it. The vacuna are then driven into the enclosure, and are afraid to jump over or pass under the string with these pieces of black cloth shaking in the wind, and are thus easily taken. Shortly after our supper off the shoulder of llama (of which the least said the better) we retired to our beds : the beautiful soft material that they were composed of made our sleep doubly refreshing.

Next morning we started a little later than usual,—I suppose we were unwilling to leave those comfortable beds. On going outside the hut, at a little distance I observed the owners of our

mansion. They had been sleeping under a wall in the inclosure for the alpaca. Notwithstanding the lady was then making her toilet, my appearance did not in the slightest way incommode her. Her husband—the lord of the creation—was stretching himself and enjoying a good scratch.

We had to pass through a most remarkable break in the mountain, through which the river ran, called "La Estrecha de Angostura." It is about seven miles long, and the water has cut the rocks into the most fantastic shapes imaginable. At this time of the year the mornings are clear and cloudless until about 2. p.m. The sky then becomes covered with thick clouds, and for about an hour the most tremendous thunderstorm rages. The lightning is terrific, and great loss of life occasionally occurs; but to encounter a thunderstorm in this narrow pass generally proves fatal to some of the party.

The path follows the turns of river, sometimes on the top of cliffs and at others close to the water's edge. The heavy rains frequently displace large rocks, which fall down and block up the path completely, when the beasts have to be unloaded and the packages carried by hand, the mules being led until the difficulties are surmounted On these lower plains there is good pasturage, and large

herds of cattle are seen here feeding. They of course belong to the Spaniards, and the Indians only have the care of them. It is about this altitude that the tree is found that produces the Peruvian bark. We met some small birds, one black and yellow, and also the cardinal. Thermometer at noon, 64°.

About 4. p.m. we arrived at a village surrounded by hills that were cultivated. The plain was covered with flocks. In the evening the llama and alpaca come home, and are enclosed in pens for the night; I have been in Italy, but I never witnessed so lovely a night as this. The moon was at her full, and, as she rose from behind a snow-clad mountain and threw her silver light over the scene, the high peaks, or rather truncated cones, of the volcanoes of Illimani and Sorata appeared close to us, although they were upwards of a hundred miles off. What a place for an observatory! A few degrees further to the North and from this height both poles could be seen, and consequently every star in the heavens could be observed from one place. No other part of the world could offer such a site for the astronomer.

In the course of my observations I remarked that the locks on some of the doors here were exactly similar to those I had seen in Egypt. Instead of our latch-key, there was a flat piece of

wood with round pegs in it of different lengths, stuck up. The wards were holes placed at irregular intervals, and before the latch or bolt could be raised there must be an agreement of the pegs and holes. Then, again, as there was only a small hole for the key to enter, it is just as difficult to pick as our locks.

The Indians vary in height from four to five feet, long black coarse hair, no beard, olive complexion, long eye of the Mongolian, and good teeth. The men are always chewing the leaves of a plant called coco, which enables them to go through great fatigue and to do without food for a long time.

In the morning we started in good spirits, as we were to arrive at our journey's end in the afternoon. Our animals, considering what they had gone through, did not appear to have suffered much,—certainly no horse could have stood the fatigue so well. The horse that accompanied us had nothing to carry and only had to keep up with the mules; still it was completely knocked up, so much so that the speculation of bringing the animal proved a complete failure.

It was now the season in which bulls are in the most savage condition, and as I passed across some of those plains that were covered with cattle, it was not very soothing to my feelings

to see one of these gentlemen with short horns pawing the ground and tossing the earth into the air. So, as I wore a red poncho and my mule could hardly get out of a trot, any one who has seen a bull-fight and knows how these animals object to that colour, can easily imagine how I enjoyed my ride. We were now in a beautiful fertile plain, surrounded by undulating hills, all cultivated. The Indians were now met in great numbers. About noon we got sight of the lake of Titicaca ; and shortly afterwards we saw the town of Puno, beautifully situated on its margin.

The town of Puno contains about 9,000 inhabitants, not all pure Indians, but a mixed race, with many South Americans. They have a fine cathedral, market-house, and Governor's residence. Some of the merchants' houses are well built, and the streets are paved with curb stones.

The valley in which Puno stands is called the valley of Desaguadero, and extends some 600 miles. It contains several towns, and if the country were not in a continual state of revolution, would no doubt be thickly populated and well cultivated. But very little is really known about this part of Peru. Pentland visited it in 1836, and he gives the height of this town 12,000 feet, and it is on his authority that we have the height of the Sorata.

At a little after 4. p m. we entered the town, and drove to a posada, where, after seeing that our mules were well provided for, we enjoyed a good dinner.

The next day I called on the Governor-General Flores. Visited the market and saw some very fine-looking country girls selling fruit. They were dressed something like the Swiss,—short petticoat, with a head-dress similar to those worn by the peasants of that country. The town is about half a mile from the lake of Titicaca, which is the largest on the South American continent, and in many parts no bottom has been found. Two rivers run into it, and I believe a small one out of it; however, there is no well authenticated account of this part of the world. There is a silver mine close to the lake, that was shown to the Spaniards on their first coming to the country. The visitor enters it in a boat through a canal; there are several locks, and in this manner he is taken into the mountain about half a mile, when he gets on a railroad. It is owned by some Englishmen, and is tolerably remunerative.

The boats that are on the lake are made by lashing a quantity of reeds together in the shape of a hammock, and two of these hammocks form a boat; of course the passenger has to sit on them: they carry a sail made of matting. There

are a great quantity of water-fowl, and the scarlet ibis and also the other, are seen in great numbers on the shore. I had a day's shooting on the lake, and, although I did not do much execution, my companions made a good bag. I found that I was not the only sailor so far inland, for I saw my old friend the seagull doing remarkably well amongst ducks, teal, and widgeon. Those sailors make themselves at home everywhere. I think that I may say that, although I was not an admiral, yet certainly I was the highest naval officer *afloat*. Fancy being on a lake, as high in the air as Mount Vesuvius placed on the top of Mount Etna.

In some very pretty rides that I had it was most distressing to put my horse to a gallop; and I found also that when I accelerated my own steps to a run I soon lost my breath, and that it took a long time to regain it, during which time I was left gasping very much like a fish out of water.

It is said that one of the Incas, when he found so much trouble brought upon his people by the Spaniard's love of gold, threw a long and massive gold chain into the lake. I must confess that more than once I have looked at the bottom in the hope of seeing something glittering.

The older inhabitants state that the Indians know of many mines that were worked in the days of the Incas, but will not point them out for

fear of being made to work them by their present masters.

The object of Fernandez's trip was to purchase gold dust from the natives ; who, when they hear that a merchant has arrived to buy gold, come from the country to dispose of it. I was present at one sale. The Indian goes into the merchant's office, and after he has taken from his belt the precious ore, the merchant runs a magnet through it and clears it from any spurious metal ; he then weighs it, when he knows exactly what he can afford to give for it, and as the payment is made in goods, the merchant, I should say, has the best of the bargain.

About three centuries before the arrival of the Spaniards, Manco Capac and Mama Ocollo appeared on the banks of Lake Titicaca. These two personages, male and female, of gigantic stature and well clothed, declared that they were the children of the sun and sent to reclaim the human race from its misery, introduced a new language, and taught them to cultivate the soil. Who these two people were, or where they came from, is rather a difficult question to answer.

After staying three or four days at Puno, Fernandez told me that he could not go back as soon as he had intended, for he was obliged to go as far as Cuzco. I was very sorry to hear this, as it would

oblige me to return by myself, fearing that the formidable R. would be placed against my name on the ship's books if I staid any longer. But I found that two sick muleteers were about to start for the coast, so I joined their party, bought a small copper kettle and a Bologna sausage for my own use, and we laid in half a sheep, with some potatoes, for the party.

The next day at noon, our new party started, and having travelled eight leagues stopped at an Indian hut for the night, sharing it with some old women who crouched into a corner, leaving us the raised part for our bed. After supper I boiled water, and when I took my thermometer out to get the temperature, the old women who had been anxiously watching me, darted out of the small door as they saw me put the thermometer into the water, uttering a scream which betrayed their intense fright.

We started next morning at 8 a.m., returning by the route that I had come, and resting each night at the most convenient place. On one occasion we were overtaken, when amidst the highest peaks and crags of the Andes, by a thunder-storm, and had to make for a hut that was seen in the distance. The crash of the thunder was tremendous, each rock sending back the echo. The whole sky was covered by a dense thick cloud, the

lightning was blinding, and the hailstones were of a size too dangerous to be welcome. Never did I behold so grand a sight,—never did I feel so much impressed with the power of Almighty God, —and never did I feel more intensely than I did on that memorable occasion the utter insignificance of mortal man !

My friends, the sick muleteers, joined a party that was coming from La Paz, so I came down the Andes by myself in two days from the Pass. I saw a large rock that had hieroglyphics on it; from whence the ocean could first be seen.

When I arrived at Tacna I returned the *breeches* with grateful thanks for the service they had rendered ; and when I got on board, the captain was very glad to see me, and still more so that I had had an opportunity of seeing a part of the world that so few Europeans have seen.

Thermometer Height.

My thermometer was one of those common ones mounted in tin. I took great care in getting the temperature of the boiling water, and carried on my observations until I arrived at the valley of the Desaguadero, whose height above the sea was determined by Pentland barometrically. I then found that my heights were 6,000 feet too high, and corrected them accordingly.

Example.

Upper station. Lower station.

Thermometer in open air = t'.....t and T'.....T temp. of mercury.

Height of barometer corresponding to boiling water. B'.....B

Palca, water boiled 183° = B' = 16·312; B = 29·921; t' = 60; t = 80.

B	—0·000870	Log. D	9·419294	(t' ± t) =
Log. B'.	—1·212507	C	0·000990	
		A	4·797680	
	1·213377			
Log. B	1·475976		4·217874	= 16,515 feet
				—6,000 corr.
D	0·262599			
				10,515 feet.

Pass of Tarcora, water boiled 164°; T' = 28; B' = 11·392; T = 80; B = 29·921.

B	0·002660	Log. D	9·620251	
Log. B'	1·056600	C	0·000900	
		A	4·801370	
	1·058860			
Log. B	1·475976		4·422521	= 26,456 feet.
				—6,000 corr.
D	0·417116			
				20,456 feet.

First hut, water boiled 179°; T' = 44°; B' = 14.913; T = 80; B = 29·921.

B	0·001560	Log. D	9·478393	
Log. B'	1·173536	C	0·000900	
		A	4·808670	
	1·175096			
Log. B	1·475976		4·287963 =	19,400 feet.
				—6,000 corr.
D	0·300880			
				13,400 feet.

Indian hut, water boiled 180°; T' = 52°; B' = 15·254; T = = 80; B = 29·921.

B	0·001220	Log. D	9·464445	
Log. B'	1·183384	C	0·000900	
		A	4·812270	
	1·184604			
Log. B'	1·475976		4·277615 =	18,960 fe.
				—6,000 corr.
D	0·291372			
				12,960 feet.

N.B.—As I started with only having two hours' notice, I was only able to get a thermometer before leaving, and therefore I could not get any of these heights in any other way.

E. D. ASHE.

Article II.—An Important but Neglected Branch of Social Science.—*By E. A. Meredith, LL.D.*

[Read before the Society, 6th November, 1861.]

Mr. Chairman and Gentlemen :

I have felt some hesitation in laying before this Society the paper which I am about to read this evening, fearing that it might be thought by some, unsuited to the character of our Society, and foreign to the purposes and objects for which it was incorporated. For this reason I purposely selected a somewhat vague title for my paper, believing that one more clearly indicating its character would have sounded somewhat strangely in the ears of the members. But for this, it would, probably, have been announced under the title of "A Plea for Destitute and Neglected Children."

Unusual, however, as it is to bring topics such as I propose this evening to discuss, under the notice of our Society, yet it cannot be questioned that they come legitimately within the scope of our labors.

Our society, it should be remembered, is not established for the cultivation of Literature and History, exclusively; although the title under which we are incorporated might lead to such a supposition. We are, by the very terms of our charter, called to investigate "all those branches of the arts and sciences from which public benefit may be expected to result."

"Social Science" (although the youngest of the sisterhood of the sciences,) is that one of them all which most immediately and directly concerns itself with whatever tends to advance the happiness and well-being of society. It deals with those matters especially, which "come home to the business and bosoms of men." It is, therefore, pre-eminently a science from which public benefit may be expected to result. And no branch of that science, assuredly, is more interesting or more important, as none is, generally, less cultivated than that which aims at bettering the condition of the destitute and neglected children who are growing up in ignorance and vice amongst us.

That a large proportion of the children of the poorer classes throughout the country, but especially in our large cities, are utterly destitute and neglected, is a fact which, unhappily, requires but little proof. Again and again has public attention

been called to the matter, by our judges and others, and various plans have been suggested to remedy this crying evil.

It is only within the last few years that the claims of this interesting but unfortunate class of the community—neglected and destitute children—have received any adequate consideration in even the most wealthy and highly civilized countries in the Old World, England and France.

Public writers and speakers in those countries were in the habit of complacently congratulating themselves and their fellow-countrymen on the increasing light and knowledge of this christian age. They did not concern themselves to enquire how large a portion of the community were as effectually cut off from all participation in the benefits of this increased light and knowledge as though they were living in the midst of heathen ignorance and darkness. When the hill-tops and the fields around us are ablaze with sunshine, who thinks of the low-lying valleys whose cheerless depths remain unvisited by one single ray of the blessed health-giving light! And thus while the privileged few were in the enjoyment of all the advantages of an improved system of education, and of all the appliances and aid to mental culture and physical comfort, which modern science has placed within their reach, they had little

thought for the crowds of their fellow-citizens who, in the language of one who speaks from his own bitter experience :

> " Sit in gloom while sunshine floods the land,
> And feel through darkness for the hand of help."

The alarming and disproportionate increase of juvenile crime was the first thing which served to awaken the public mind in England to the condition of these unhappy children.

About the same time, or rather earlier, the attention of some of the numerous Philanthropic Societies of the neighbouring States (Societies which reflect honor on that country) was directed to the same subject. In Canada too, as far back as the year 1849, the commissioners appointed by Government to report upon the steps to be taken for the improvement of our system of criminal legislation, in their second report laid before Parliament in that year, denounce in forcible language the evils of the indiscriminate mingling together of children " who have strayed for the first time from the paths of honesty, or who, perhaps, have never been taught the meaning of sin, with the hardened offender of mature years." And as a remedy for this evil they recommend the immediate establishment of refuges for children.

For good or ill " the child is father to the man." The habits, tastes and feelings, whether good or

bad, acquired in childhood, generally remain unchanged through life, growing with our growth and strengthening with our strength; shall we then be surprised that the wretched boy who has received no care or instruction in his childhood, who from his cradle has breathed an atmosphere of vice, should pass his youth in crime and excess, and end his days in the penitentiary or on the scaffold! Thus it happens that those whom society ignores and neglects as children, become in after-life the "whips and scourges" to plague her for her unnatural and short-sighted policy.

Imprisonment in gaol, after the first conviction of the juvenile offender, has every where been found powerless to arrest the growth of crime in this class of the population. Indeed, many intelligent magistrates have asserted, (with probably but too much truth) that early imprisonment in ordinary gaols, so far from having a tendency to diminish crime, is itself a great and primary cause of crime. So true is it that ordinary gaols, not only in Canada, but even in older and wealthier countries, must be regarded, more especially for the young, not as schools of reform but as nurseries of vice.

Within the last two years, the Government of Canada, in establishing juvenile reformatories, has taken a wise and important step towards checking the growth of juvenile crime and reclaiming young offenders.

To these reformatories we look with hope, and with a confident expectation, that, if properly conducted, a large proportion of the inmates will leave them reclaimed; and that instead of going forth from their imprisonment to swell the ranks of our criminal population (as they should probably have done had they been sentenced to the common gaols) they will become good and useful citizens.

But these institutions, useful as they unquestionably are in a high degree for juvenile delinquents, are of no benefit whatever to those who have not actually made themselves amenable to the laws. To enter the reformatory the child must have qualified himself by the commisssion of crime, he must have undergone the disgrace of a trial and conviction, and must have passed through the polluting atmosphere of a gaol.

The reformatories are remedial but not preventive; they aim at reclaiming the boy who has become criminal, not at preventing him from becoming such.

Infinitely better would it be, not merely on religious grounds, but on grounds of public policy, humanity, and economy, to devise, if possible, the means to rescue these children, before they have actually commenced a career crime of; *Principis obsta*, is ever a sound and wise maxim, and here its wisdom is unquestionable. Here, if anywhere,

"prevention is better than cure." To provide the machinery for preventing the growth of vice; to check and dry up the streams of crime at their source, is surely a noble object, one worthy of the greatest efforts of the christian philanthropist and statesman. Such is the purpose and such the object, for which the establishment of Homes or Houses of Refuge is here recommended. They are in fact an attempt to carry out, as regards these forsaken children, the precept of the inspired writer. "Train up a child in the way he should go, and when he is old he will not depart from it."

It has been truly observed that until within the last few years the penal legislation of almost all countries was essentially punitive, and in no respect preventive. It could scarcely lay any claim to being considered as even remedial or reformatory, and its reformatory efforts, such as they were, were confined almost exclusively to old and hardened offenders. The whole system was unphilosophical, and in the strict sense of the term, 'preposterous.' It was a beginning at the wrong end.

It is easier to train the sapling than to transplant the full grown oak, and it is an easier and a more hopeful task, to train up the yet docile child in the paths of virtue, than to win back to honesty and self-respect, the hardened and

degraded felon. *Argilla quidvis imitabris uda,* is the wise maxim of a heathen poet. The child is the moist and plastic clay which the potter can mould and shape to any form he pleases—The man is the formed vessel grown hard by exposure to the external atmosphere—you may break it, but to change its shape or to re-form it is all but impossible. In connection with this part of my subject I may be allowed to quote a passage from a sermon of the celebrated Bishop Butler: "The care of youth, which is the general notion of education, becomes a distinct subject and a distinct duty, from the particular danger of their ruin if left to themselves, and the particular reason we have to expect, they will do well if due care be taken of them." And again, "God forbid that it should be impossible for men to recollect themselves and reform at an advanced age; but it is in no sort, in the power of others to gain upon them, to turn them away from what is wrong, and enforce upon them what is right at that season of their lives, in the manner we might have done in their childhood."

The preceding remarks suffice, I trust, to prove the necessity and utility, to say nothing of the duty, of securing the blessings of early education and training for those who, under the present state of things, are effectually, but without

any fault of theirs, debarred from such advantages.

Assuming then, the importance and utility of "Homes, &c.," to be admitted, I shall briefly point out: 1st.—The classes of children for whom these Refuges or Homes are intended. 2nd.—The nature of the instruction which should be given to the inmates of the Homes and Refuges, and the way in which they should be disposed of when they leave the Home; and 3rd.—The legislative provisions which would seem to be necessary to establish this class of institutions in Canada.

First, as to the classes of children for whom the Refuges are designed, They are:

1st—Children vicious and incorrigible at home.

2nd.—Vagrants.

3rd.—Destitute and friendless children, who either have no parents or natural protectors, or whose parents or natural protectors (from poverty, criminal indifference, depraved habits, or other causes) are unable or unwilling to give the children under their control that care or education which they require, and without which they are almost certain to fall into habits of vice and crime.

With reference to the instruction, given to the inmates of Refuges, it is to be borne in mind that these places are not meant to be prisons, but schools for the education of children who would otherwise be left wholly ignorant.

The answer to this question may be given in the words of Mr. C. Thompson's letter, from a paper read by him before the British Association in the year 1859, pleading the cause of these unhappy outcasts "Whom Society seems to have agreed to treat as a pariah caste, beyond the legitimate sphere of Christian enterprise," he says: "What did these children require? It may be well summed up in three words, Christian parental care. For their bodies they need food; for their mind, instruction in the elementary branches of knowledge; for success in life, they need training in industrial habits; and for their never-dying souls, they need abundant religious instruction."

After the inmates have remained a sufficient time in the institution, and when the early inclinations to vice appear to have been conquered, and habits of industry acquired; when, in fact, there is good reason for supposing that a real reformation has been effected, and that the child has acquired the elements of school learning, and some knowledge of a trade, then the authorities of the institution should have power to bind out the pupils as apprentices either to farmers or mechanics or as house servants, or in any other way that may be thought advisable.

A year or a little more is generally found sufficient to bring about this desirable change in the

habits and disposition of the child, and that is accordingly about the average period during which the children are kept in such institutions in the neighboring States.

The want of Homes or Refuges, is most felt in our large cities ; here are naturally found a very great proportion of those vicious and incorrigible, or friendless and unprotected vagrant children, 'City Arabs' as they have been not inaptly designated, for whose benefit the Refuges are intended. The Homes should therefore be established at or near the principal cities. It would be indeed very desirable that there should be, if possible, an industrial farm connected with the Home. If this were the case, the boys, during their sojourn in the institution, might be instructed in the rudiments of husbandry and horticulture, occupations of all others the most desirable for youths, as well for their moral improvement as for their physical health.

Legislative provisions necessary to create and organize Homes.

It would be premature to consider here, in detail, the Legislative enactments which would be necessary in order to establish Homes or Refuges for the purposes stated in this paper. I may remark, however, that, as during the last twenty or thirty years,

many such institutions have been in successful operation in the neighbouring States, the laws under which they have been established and successfully conducted there, could not fail to assist materially in legislating on the subject in this country.

The Homes might be managed either by societies of benevolent individuals, or by a committee partly of private persons and partly of persons selected by the city municipalities. * As soon as the managers of a Home were provided with a suitable building for the purpose and had complied with whatever formalities the law might prescribe, they might be incorporated under the provisions of some general Act, such incorporation to be duly declared by proclamation in the *Gazette*. Once proclaimed, the Home would be legally available for all boys or girls of the class for which it was intended within the limits prescribed by the proclamation.

The statute should further authorize certain magistrates, say for example the Police Magistrates,

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* In September, 1859, some benevolent ladies in Toronto set on foot a Home for destitute boys not convicted of crime. In their report for 1860, they show that the institution has already accomplished a great amount of good—upwards of sixty boys were received into it last year. The managers of the Home represent that their two principal difficulties, are retaining the boys in the Home during the necessary period and the want of authority to bind them out as apprentices when they are ready to leave the institution.

or Recorders in cities, the County Judges or Judges of Superior Courts elsewhere, to send the boys and girls, on the necessary complaints or voluntary representations being made before them, and due enquiry had in the case, to the Homes, for any indefinite period that may be found necessary, subject only to the restriction, that the children should not be allowed to be kept in the institution after reaching a prescribed age.

The Legislature should further authorize the managers of the Homes to apprentice the boys, (with their own consent if over fourteen years of age), to farmers or mechanics, and the girls to dress-makers or other suitable employers.

The Magistrates should have power to send the children to the Homes on the representation or complaint of:

1st.—The parents or natural guardians of the boy.

2nd.—A stranger, and

3rd.—The boy himself.

It would be necessary to establish that the child was:

1st—Either vicious or incorrigible at home.

2nd.—Utterly destitute, or

3rd.—A vagrant.

When children are sent to the Home from any municipality other than that in which the Home

is situated, and by which it is mainly supported, the municipality sending the child should be liable to pay a stated sum to the Home for the maintenance of the child during its stay in the institution.

Homes and Refuges considered from an economical point of view.

The advantages of the proposed Refuges as a matter of public economy, are apparent at a glance. Consider merely the cost of the prosecution of criminals, of their support in gaols, reformatories or penitentiaries, of the depredations they commit upon society when at large—and we shall find that the aggregate during the career of a criminal exceeds upon the average, many hundreds if not thousands of pounds; and yet, in this calculation, we have only glanced at some of the direct losses inflicted on society by the criminal; we have altogether omitted to estimate the indirect loss which the criminal often causes society in many other ways; as, for example, by training up, during his course of crime, others to follow in his footsteps and to make society their prey. †

† A case is quoted report of the City Mission, London, of a man who had been twenty years a pickpocket, and who, during that time had been twenty times in gaol, and had trained 500 young thieves.

Persons who have not had their attention specially called to the subject, may be startled at these calculations of the pecuniary losses caused to society, from the depredations of the criminal classes. But the following passage from the statement of the Rev. John Clay, for thirty-four years the unwearied chaplain to the Preston House of Correction, in England, more than confirms the foregoing statement: "Some years ago," he writes, "a committee of enquiry into the annual depredations of the Liverpool thieves, stated the amount of those depredations at £700,-000! Now I ask you," he continues, "to balance between the charge of training the young outcasts of the country to godly and industrious habits, and the waste of money, time and souls, consequent upon our neglect of an undeniable christian duty."

The industrial schools which have recently been established by statute, in England, as also the celebrated Ragged Schools which the active philanthropy of that country has called into existence within the last few years, have both of them for their object, to provide education for the same class for whom our Homes are designed. The success which has attended the Ragged School movement is well-known—hitherto they have had no support from the State, but the advocates of these schools feel warranted now in making a

strong appeal to the Legislature to extend to them State aid. It is to be hoped the appeal will not be in vain.

There would indeed be one great, and I think, important difference between Homes such as are recommended in this paper, and those in existence in the neighbouring States. Into the Refuges of the Union are admitted not merely the poor and unfriended outcasts who have never rendered themselves in any way amenable to the law, those in fact whose only crime is poverty, and those on the other hand, who have been convicted of various minor offences, and who, consequently, have been subject more or less to gaol influences.

According to the plan here suggested, no one should be admitted into a Home who had been in gaol, or who had been convicted before a Court of Justice of any offence; at least, not of any offence which, under the present law, would warrant his being sent to a Reformatory. Our Reformatories are the proper receptacles for persons of this class. It appears to me a matter of great importance to preserve the distinctive character of a Home as a place not for criminal but for destitute or neglected boys; as a school for teaching, not a prison for punishment. By carefully excluding actual offenders from our Homes, and reserving them entirely for unfortunate and friendless children, these

institutions would soon come to be regarded by the public as places which could be entered without disgrace and left without infamy. No stain would attach to the character of their inmates, and the fact that a boy or girl had passed a year or more, under the protection and guardianship of the authorities of the Home, so far from being a bar to future success in life, would be considered in some sort as a pledge and guarantee of the good conduct of the child.

Homes or Refuges, if limited in their use to the class of persons whom we have described, would form, as it were, an immediate link between our Common Schools and our Reformatories. While entirely distinct and separate from both, they would form the natural and necessary supplement of both, and would meet the wants of a class for whom at present there is absolutely no provision.

Charitable institutions of a kindred character with the Homes here advocated, have indeed been in existence for many years past in some of our large cities, among them may be mentioned the Montreal Roman Catholic Asylum, and the Montreal Protestant Orphan Asylum. Similar institutions are also in existence in Quebec, Toronto and Kingston.

All these institutions are, no doubt, productive of great good. In the official report of the Montreal

Protestant Orphan Asylum for last year, it is stated that 600 children had been received into the Institution since its foundation. † But, useful as these institutions doubtless are, they supply to a very limited extent, the objects contemplated to be attained by the Homes. In the first place the benefits of these asylums are confined to orphans (who have lost both parents) exclusively. Again, there is no power vested in the magistrates, of sending children to these asylums. And again, the asylum authorities have no power to retain a child, if claimed by his natural protectors, or if the child chooses to leave the institution.

Should the Government think proper to carry out the scheme here propounded it would no doubt be practicable, as it would clearly be desirable, to come to an understanding with the managers of these and other kindred institutions already in existence, with a view to their being used as Homes, at least to a limited extent. The Government would thus find itself provided with institutions fully organized and well conducted, which (the consent of the managers being obtained) might be at once erected into Homes. The charitable ladies at the head of these various institutions, would not be likely to object to any arrangement

† See Historical Sketch of the Montreal Protestant Orphan Home, p. 26.

which would enable them to extend so much the field of their truly christian labors.

Other institutions more closely allied to those recommended here have, as already stated, under the names of Refuges, been for many years past in successful operation in many of the States of the Union : they have received the highest testimony as to their usefulness, from the most distinguished jurists, judges, and philanthropists on the continent of America.

For myself, I do not hesitate to say that I am persuaded, that it is not to our penitentiaries, not to our gaols, not even to our reformatories, that we must mainly look, but to Homes or some such institutions, if we wish, with God's help, " to stand between the living and the dead, and stay the plague" of immorality and vice amongst us.

Before concluding this memorandum it will not be out of place to advert very briefly to two objections which have been urged against the class of institutions here referred to. It may be, and has been, argued that to restrain in any way persons who have not violated the laws, is contrary to the natural rights of personal liberty, and again that a further injustice is committed when children are taken away from their parents [their natural protectors] and committed without their consent to the guardianship of others. The right of per-

sonal liberty and the rights of parents are important rights which Englishmen are wont to regard as peculiarly sacred. But we must be careful not to carry our morbid jealousy of any apparent interference with those rights to such an extreme as to work injury to those very persons whom we desire to benefit and protect. As to the former objection we may remark in the first place, that the power of sending children to Homes should be exercised only according to strict forms prescribed by law; and should moreover, be surrounded by such safe-guards and checks, as would make the abuse of that power improbable if not impossible. This objection is, however, answered practically by the fact, that similar institutions have been in successful operation for more than thirty years in many of the neighboring States, and yet I am not aware that in any case has the power of the magistrate, of sending children to the Homes, been want-only abused.

The grounds upon which the State is justified in interfering with and restraining the liberty of children, and on taking them, if necessary, from their parents for that purpose, are so well put by the Superior Court of Pennsylvania, that I cannot do better than quote the part of a judgment of that Court bearing on the point.

"The object of the charity, or House of Refuge,"

argues the Court, "is reformative, by training its inmates to industry; by imbuing their minds with principles of morality and religion; by furnishing them with means to earn a living, and above all by separating them from the corrupting influence of improper associates: to this end may not the natural parents, when unequal to the task of education or unworthy of it, be superseded by the *Parens patriæ* or common guardians of the community. It is to be remembered that the public has a paramount of interest in the virtue, and knowledge of its members, and that of strict right, the business of education belongs to it; that parents are ordinarily entrusted with it, is because it can seldom be put into better hands, but when they are incompetent or corrupt, what is there to prevent the public from withdrawing their faculties, enjoyed as they obviously are at its suffrance?

"The right of parental control is a natural but not an inalienable one.

"As to the abridgement of indefeasible right by by confinement of the person, it is no more than is borne to a greater or less extent in every school, and we know of no natural right to exemption from restraints which conduce to an infant's welfare."

Mr. Senior, one of the Commissioners recently appointed in England to report upon the subject of 'Popular Education,' lays it down as an axiom

that " it is as much the duty of the community to see that a child is educated as it is to see that the child is fed ; and that unless the community can and will compel the parents to feed the child or to educate the child, the community must do so."

In the foregoing remarks I have labored to shew the necessity for establishing Homes or Refuges, to point out the classes of persons for whose benefit these institutions are mainly designed, and the nature of the instruction which should be offered in them to their inmates. I have also replied to the objections sometimes urged against those institutions, on the ground that they are an infringement on the liberty of the subject and a violation of the parental authority.

In closing this paper I cannot refrain from citing the concluding paragraph of an admirable pamphlet on the subject of Houses of Refuge, published in Philadelphia in 1851. It is there stated :

" It should always be remembered, in connection with this whole subject that there is a sort of moral retribution provided for in the very constitution of society, which visits upon us the just punishment of our neglect or omission of duty towards the ignorant and forsaken. If juvenile delinquency is allowed to pass with impunity, it will soon break forth into outrage and crime of every description ; and offences and offenders will

multiply without number or end. If on the other hand, we check the formation of the early habit by removing the child from scenes of temptations and guilt, if we put him where restraint and wholesome discipline are connected with personal liberty and enjoyment, and with literary, moral and religious instruction,—and then place him in a position to be taught some useful and profitable art of life—we are sure that the best interests of the community are subserved, while the individual himself is saved and blest."

In my capacity as a member of the Board of Inspectors of Asylums and Prisons of the Province, I some months since laid before the Government a memorandum advocating the views contained in this paper.

It is in the hope that the prestige of this Society may secure some share of public attention to this subject, so deeply interesting to the Community at large, that I have ventured to bring the matter under your notice; should such be the result, I shall have no reason to regret my departure from the class of topics usually treated of before the Society.

Article III.—On the Age of Timber Trees, and the prospects of a continuous supply of Timber in Canada.—*By John Langton, Esq., M. A., President.*

[Read before the Society, 15th January, 1862.]

There are few subjects of greater interest to Canadians generally, and especially to the City of Quebec, than the future prospects of our timber trade, which affords at present employment to so large a portion of the population, and is the staple article of the trade of this port. The questions of the probable duration of our supply of the raw material, and of the best means of preventing the waste of this great source of wealth, are frequently canvassed; but the statistical data upon which to form an opinion are very imperfect, and the most contradictory estimates are made by persons who have the best opportunities of ascertaining the facts. In the meantime we go on practically treating our forests as inexhaustible, and in the face of the yearly increasing distances, to which the lumberers have to go back from all our main streams, we have as yet taken no steps towards preserving what remains to us. Under these cir-

cumstances I need make no apology to a Quebec audience for offering these remarks as a contribution to the subject; and although I am sensible how imperfect they are in may respects, I feel the more emboldened to bring them forward, as they may induce others to pursue the same line of enquiry, and to obtain more comprehensive data, for which the timber yards of Quebec offer such great facilities.

My object in the observations, which I propose submitting to-night, has been to ascertain from the examination of the timber itself the average ages of the trees brought to market, and the rates of growth at different stages in the tree's life, with a view of estimating the extent of country which would be required to keep up a given supply, if the trees were preserved and allowed to renew themselves, as in regular plantations, and in many of the forests of Europe. The rings of exogenous trees, in a temperate climate at least, afford us the necessary indications, and by an inspection of each piece of timber we have an approximate history of its growth. The rings however are extremely irregular. The pith is almost always very much nearer to one side of the tree than the other, and an examination of the stumps *in situ* shews that the greatest luxuriance of growth is on the south side, or in my part of the country generally on the south

east side. There are however often modifications of this tendency, and different trees vary very much both in the direction and in the amount of the deviation, the pith being almost central in some, whilst in others the most luxuriant side has as much as twice the development of the other. In making the measurements we must therefore take them along the mean radius, or take the mean of two opposite semi-diameters. The measurement should not be taken at the butt, if it can be avoided, for the inequalities there are very large, the rings immediately over a main root being often five or six times as wide as the average, especially in old trees ; and the same thing occurs to a less degree in the neighbourhood of a branch. Trees also which grow in exposed situations have extraordinary irregularities. I examined one, which grew in the University Park at Toronto, where the rings in the heart were so close, that they could hardly be counted. The tree at 30 or 40 years old cannot have been as thick as a man's wrist, after which it took a sudden start, with rings of nearly a quarter of an inch each. In the woods, however, the growth is generally much more uniform, and the greatest difference I have observed in a single tree, (excluding the butt) has been between 25 rings in an inch, and eight rings in the same space. In a pine tree it is very rare to find a single ring

prominently developed, which is a frequent and remarkable feature in most kinds of hardwood, indicating I suppose a peculiarly propitious season; and if you do find one, it is commonly confined to one side of the log, the ring thinning off to the average size, or even below it, on the other side, as if these had been a local, rather than a general cause for the unusual development. In a pine tree you will generally find 10 or 15 small rings consecutively, or as many large ones; and although this indication of unusual vigour is to be seen at all ages, it is generally between the 60th and 120th year that it is most noticeable. Individual trees also in the same locality vary very much in the luxuriance of their growth; and I have no doubt, if my opportunities for examination had been more extensive, that different localities would have exhibited equally great variations. The rate of growth of some pines I examined on the Saguenay seemed very much slower indeed than what I had observed in Upper Canada; and I find a record in the Report of the Geological Survey for 1858, of some spruces of astonishingly slow growth, near the head waters of the south branch of the Magdelen, in the district of Gaspé. Mr. Richardson counted 161 rings in one tree, only 4 inches in diameter, and estimated the oldest in a grove, where none was more than twenty feet long and one

foot in diameter, at 600 years. This would give eighty rings to an inch in the one case, and one hundred in the other.

With all these causes of irregularity, it may appear difficult to arrive at any reliable standard of growth; but if you take your trees by tens or twenties and then compare the averages, the individual differences disappear, and there is a general uniformity in the results. I have at different times examined some hundreds of trees, and for the county of Peterborough at least, the part of the country in which I lived, the following may be considered the average manner of growth. The average increase of diameter during the first sixty years is about .17 of an inch annually, the rate being almost invariably the least during the second twenty years. During the first twenty years it is often much more rapid, but that rate, as gathered from the rings of a full grown tree, is much less than would be indicated by the present diameter of young saplings. It would appear that the immature wood is compressed by the subsequent additions and even after they have become consolidated, the heart continues to shrink, causing what is called shakiness. There is very little indication of such shrinkage or compression in the later years of a tree's growth. About the sixtieth year there generally commences a decided increase in the width of the rings,

and the annual increase of diameter averages .20 of an inch; but after the 120th year it usually falls off again, and in the old age of a tree the increase of diameter is less than in its youth. I speak here of the width of the rings when they are converted into true wood, but they remain for several years in the state of sap-wood, during which the rings have not attained their full width. The number of years during which the new additions remain in the condition of sap-wood is very variable. It varies at different ages, the rings of sap-wood being generally much more numerous in an old tree than in a young one; it varies also very much in different localities, and in different trees under apparently the same circumstances of growth, and even in the same tree. The change from sap wood to true wood is abrupt; there is no mistaking where the one ends the other commences, but this important change in the character of the material by no means follows the course of the rings. The same year's growth, which in one part of the tree is perfect wood, may remain sapwood for several years in another part. In a full grown tree the growth of the last 15 to 25 years is generally in the immature state of sap-wood.

From these measurements it will appear that the first 80 rings of true wood will give a diameter of about 14 inches, and allowing for the sap-wood, we

may say that, when 100 years old, a pine tree becomes for the first time fit for making merchantable timber. At that age too it has attained, if not its greatest altitude, about the greatest usual length of profitable timber, free from knots and branches, say about 50 feet. We may thus form a table of the annual increase of timber, from the time a tree is fit to be cut for market, till it is about 200 years old, beyond which it is not common to find a tree which is fully available. Some few giants of the forest are still sound throughout at 300 years and even more, but in general they become injured by punk-knots, or red rot, or are hollow at the heart long before that time. Some sound cuts may still be got out of them, and good boards may be taken from the outside after the heart is hollow, but the whole tree can rarely be used after 200 years, and a large proportion become more or less injured after 180 years. You cannot indeed obtain many masts, or the largest description of timber, within the 200 years, and it is almost a pity to cut down a tree of 100 years, which is just at its most vigorous period of growth, but these are about the average limits of profitable growth, and beyond 180, or at most 200 years, the trees, taken altogether, will begin to deteriorate in quality as much as they increase in size.

I have prepared a table upon this principle,

shewing, at different ages, (from 100 to 200), the average diameters of true wood, and the rate at which the solid contents increase, upon the supposition that the effective length of the tree is 50 feet. I give also in another Table the increase in a set of masts brought to Toronto by the Northern Railroad, between their 200th and 300th years. These latter start at their 200th year with a greater average diameter than ordinary trees, and the annual increase of timber is at a much higher rate than is indicated by the former; and even this is very much below what the increase of cubic contents really was, because for comparison, I have calculated it only at 50 feet of effective length, whereas their real length was very much greater. These are, however, unusual examples of growth. The same vigor of constitution which enabled them to attain more than ordinary height, and to preserve their soundness long after the majority of trees begin to decay, caused them also to increase more rapidly in diameter. Such examples are too few to have much effect upon the average of all the trees examined. The general result is, that, in the second century of their growth, pine trees make, with tolerable uniformity, 2.4 cubic feet of timber annually. I suspect however that even this average is beyond that of all the trees in the forest, even in my own neighbourhood,

and further north it is no doubt still less. Although it is my average for all the trees, good and bad, which I have examined, they were to some extent selected before they were brought out of the woods. One lot of very poor sawlogs, which had been taken off land already throughly culled for square timber, only indicated an annual growth of less than 1.5 feet, and another set of fair logs, but with few large ones, gave barely 2 cubic feet. The selected masts, taking into account their greater length must have had an increase of 5 cubic feet. It must be borne in mind, that the average increase of 2.4 cubic feet is calculated on the round log, which if the timber is to be squared, would only be equal to an increase of 1.53 per tree; but considering the practice now becoming common of bringing wany timber to market, and the still greater amount of lumber which is cut out of a log in a saw-mill, the available growth may be taken at 1.75.

Taking however 1.5 cubic feet only as the annual growth per tree, and supposing 20 trees above 100 years old to stand on an acre, which is only about one half of what will sometimes be found in a good pine ridge, we get an annual produce of 30 cubic feet per acre: or the natural increase, if properly preserved, of 2,000,000 acres of good pine land, would keep up for ever our present export. Now the quantity of land under license in 1860

was 27,413 square miles, or 17,544,320 acres ; so that, making every allowance for what is swamp, or hardwood, or barren, it is hardly too much to say that, with proper care, the land now in the hands of the lumberers would maintain a constant supply of timber equal to our present export.

Another view of the question may be taken which is quite independent of my estimate of the annual increase, and which is based only upon the ages at which trees may be brought to market. If all the trees above the age of 100, standing on a lot of land were cut down, taking care not to injure the young trees, and if the land were carefully preserved, in from 80 to 100 years hence there would be as much merchantable timber standing on the lot again, as when it was first lumbered over. This would not probably be the exact manner, in which the timber could be taken to the greatest advantage, as the annual increase is rather greater in the later than in the earlier years, and you might make more and better timber by not cutting any tree till it was 150 years or upwards, unless it shewed signs of incipient decay; but it will serve as an illustration of the natural increase. Allowing then on the average only four trees per acre, at the very low average of 70 feet, 200,000 acres would yield our annual consumption of from 50 to 60,000,000, and the 17,500,000 of acres now

under license would keep it up for nearly 100 years, at the end of which time the land first lumbered over would have produced a fresh crop.

It is rarely indeed that our timber lands are so treated as to give any opportunity of testing the rate, at which timber is restored by its natural growth; but it is astonishing how quickly land will recover itself, or rather what efforts it makes to do so in spite of our bad treatment. I know myself a small lot of land of only 64 acres, which from its convenient situation on the river Otonabee, has been lumbered over repeatedly for the last 30 years. It has been thought each time to be completely denuded, but the next comer has found something still left. I procured the statistics of the produce from a gentleman living in its immediate neighbourhood, Colonel Strickland; and it appears that, besides having square timber made on it twice to the amount of 20,000 feet, no less than 8 parties have at intervals still found it worth their while to take saw logs off it, to the number of 7425 in all; and this although from its situation it has been constantly resorted to for boom timber and framing timber, by which the young trees, which should now have been fit for another crop of logs, have been destroyed.

In older countries more care is taken of the timber, and a more systematic method of reaping

the harvest is adopted, but it is very difficult to find any accurate statistics. With regard to the district which supplies the Memel and Konigsberg timber we have some reliable data, which shew us what we might do with a better system. The timber shipped from these ports is brought down from the interior by the Nieme and comes principally from Volhynia. The area of the timber producing country is estimated by Mr. Quinn, in his late report at 27,000 square miles or 17,280,000 acres, almost exactly the same area, as that now under license in Canada; but so far from its being a wilderness, like our back country, it exports a large quantity of grain, and supports a population of nearly two millions. The amount of timber produced does not indeed nearly equal that from Canada, but it has been maintained without any very material diminution for years, because the timber lands are carefully preserved, and are lumbered upon over and over again. It is a great pity that we know so little of the means taken on the Baltic to preserve the timber, especially in the South of Norway, where a still more limited area continues to supply the markets of Europe with the best description of timber. This is a most important subject, to which I believe the Woods and Forest Branch of the Crown Lands Department is now directing its attention, and it is to be hoped

that the result may be the adoption of regulations, which may prevent the wanton destruction of timber now going on in Canada. In the meantime it may be useful to point out what are the principal causes of the present waste, and what remedies, or palliatives at least, it may be possible to apply.

The principal causes of the destruction of timber are the following:

1st. The progress of settlement, which not only consigns the younger trees at least to the log heap, but materially increases the danger from fires in the woods.

2nd. The destructive fires which sometimes destroy thousands, and even hundreds of thousands of acres, not only killing the trees already merchantable, but rendering a succeeding crop impossible for a couple of centuries. The vicinity of settlements generally bears the blame of these fires, but the carelessness of the lumberers themselves is often the cause of them.

3d. The practice of squaring timber, by which fully 20 per cent of the best part of the tree is left on the ground in the shape of chips. This cannot be altogether avoided. The increased quantity of sawn lumber produced, and the admission of wany timber into the European markets, will make a material reduction in the loss from this cause.

4th. A very large loss, the amount of which it is difficult to estimate, is occasioned by the square timber manufacturer only using the best part of the best trees. Many a tree is cut down, which would make excellent sawlogs, or even timber in short lengths, which, being found unfit for his purpose, is left to rot on the ground, or only a portion of it is taken. The loss from this cause alone can hardly fall short of 10 or 15 per cent. It has been proposed to check this waste by charging duty upon every tree cut down, whether it be used or not, as is done in the Prussian forests; but this, though it might increase the amount of duties a little, would be only a very partial remedy for the evil.

5th. The destruction of small trees, which a few more years would render available, is a serious detriment to the future prospects of the lumber trade. The merchantable timber is all that a lumberer looks at, and the rising generation of trees is to him of no account whatever. In Norway I understand that it is forbidden to cut any tree under a given size for any purpose, and something of the kind might be attempted here, but I am afraid with very small results under our present organization. It is clear however, that if we are to expect our timber districts to bear us a second and third crop, the possibility of which it is the principal aim of the

present paper to show, something must be done to protect the young trees, which are to form the basis of our future supply.

The most effective remedies for these evils appear to me to be two.

1st. First to discourage indiscriminate settlement in the timber districts. Where the land is of such a quality as to support an agricultural population, by all means let the settlement proceed as rapidly as possible, for with all my respect for timber, I value a man more than a great many trees. But a very large portion of our back country never can maintain a healthy settlement. The cheapness of the land, and ignorance of what can be profitably worked, together with the facility of access by the new roads opened by Government and by the lumberers, attract some, and others are induced to make a temporary settlement on account of the employment to be obtained in the shanties, and sometimes to make a profit by the trees themselves. They destroy much, and the lumberer who has a license over the land, when he finds the settlers approaching, has to scramble for anything he can get, before it passes out of his hands, to the destruction of any well organized plan of making the most of his limits. I am convinced that a large portion of the new settlements in the back country, lying north of Lake Ontario,

between the Ottawa and Lake Huron, will prove utterly worthless as the site of an agricultural population, but the attempt to form one will in the meantime have destroyed a mine of future wealth for Canada. The new lands ought to be classified, and only such as are really good should be open for indiscriminate settlement, and the rest ought to be reserved for lumbering purposes.

2nd. What ought to be the policy with regard to these latter lands? Certainly not the policy which has hitherto been pursued. At present a license is issued renewable from year to year at a moderate rent at first, but the rent rising rapidly if the license is not occupied, and the license lapses immediately upon the land being sold. I cannot imagine a system more completely calculated to denude the country of timber. Every license holder has an immediate interest in making everything he can off his limits, as rapidly as possible, utterly regardless of what may become of it ten years hence. It is true, that the necessities of the trade often compel him to look forward for some years, but he does this in spite of discouragement, and under every disadvantage. He may have invested a large capital in mills, which will be useless without a supply of logs, and he is obliged to undertake expensive works on the streams to make his limits available, to open roads, and to establish farms for

his supplies; but he does this without any certainty if being able to keep his limits even at an increasing rent. We complain of him as improvident, but our own legislation makes him so. The true remedy is to give facilities to him for acquiring a property in the land. I have very little faith in restrictive regulations as to cutting timber. They may succeed in a country like Russia, but in Canada we could not organize the machinery for carrying them out effectually. But I have the greatest confidence in individuals, even improvident lumbermen, looking after their own interests. You will not find a farmer, however lazy, who will break down a branch of his own apple tree as the easiest way of gathering the fruit; though it is just the plan that would suggest itself to a party of marauding soldiers, who held the country this year and never expected to see it again; but our legislation has made the bulk of lumberers into a band of marauders, whom we have perversely excluded from all hope in the future.

The principal objections to giving the lumberers a property in the land have been, the fear that the trade should get into the hands of a few men of large capital, and become a monopoly, and the dislike to discourage settlement. I do not entertain any fears in either direction. A business which requires a large capital naturally falls in to comparatively few hands, and such is the case at present. The capitalists

may not be the owners of the limits, but they provide the advances, by which alone the smaller lumberers can carry on their business, and these are as much in their power, though employed much less usefully to themselves and to the country, as if they were their paid servants and agents. The men who have any capital, being taught provident habits, would turn it to better account; and I do not think the country would be the loser if there were fewer adventurers, who, having obtained some advances, and a nominal right to a few hundred acres, run in debt to the settlers for provisions, steal what timber they can lay their hands on, and having handed over their raft to the party who made the advances, return to the woods as penniless as before, and try their fortune the next year in another neighbourhood, where they are not yet known. Nor do I think that the settlement of the country would be retarded. A lumberer wants men and horses and cattle for his work, and hay and oats and provisions without too great a distance to haul them; and he does not want to keep any land fit for settlement lying idle on his hands. It is just as much his interest to get the hardwood land settled, as it is to preserve the timber land, which is generally unfit for permanent occupation. The only way to make our immense back country permanently productive is to raise up a class of men, whose interest

it is to make the most of it, just as the individual enterprise of our farmers is turning to account the more fertile lands on the front.

Table of average growth of pine trees from 100 *to* 200.

Age of Tree.	Diameter of solid wood in inches.	Cubic contents of round tree at 50 feet length in feet.	Annual increase of Diameter.	Annual increase of cubic contents.
100 ..	14.30 ..	55.76		
			.214	1.919
120 ..	18.58 ..	94.14		
			.221	2.506
140 ..	23.00 ..	144.26		
			.182	2.464
160 ...	26.64 ..	193.54		
			.174	2.693
180 ...	30.12 ..	247.40		
			.145	2.497
200 ..	33.02 ..	297.34		
Average....	24.18 ..	109.54	.187	2.416

Table of selected masts from 200 *to* 300.

200....	37.76...	....388.80		
			.180....	....3.88
220....	41.36...	....466.50		
			.139....	...3.24
250...	44.14....	....531.30		
			.167....	...4.17
260....	47.48...	....614.70		
			.111....	...2.94
280....	49.70...	....672.50		
			.097...	...2.68
300....	51.64...	....726.10		
Average..	45.35...	....566.60.....	.139....	...3.38

AVERTISSEMENT.

Les documents que publie, dans ce volume, la Société Historique et Littéraire de Québec, contiennent des renseignements fort intéressants sur l'origine, sur les voyages et sur la vie d'un des plus célèbres navigateurs du seizième siècle. Le nom de Jacques Cartier, qui en 1534 découvrait l'embouchure du Saint-Laurent, et qui en 1535 remontait le grand fleuve jusqu'à Stadacona et Hochelaga, est intimément lié avec l'histoire de la Nouvelle-France ; car, quoique le capitaine malouin n'ait pu réussir à y former un établissement solide et permanent, il a néanmoins eu l'honneur de frayer la voie qui fut ensuite suivie par le fondateur de Québec et ses compagnons.

Pendant bien longtemps l'on ne connut guères de l'histoire de Jacques Cartier, que les circonstances rapportées par lui-même dans la relation de ses voyages. Mais, depuis une vingtaine d'années, grâce aux recherches faites à Saint-Malo, sa vie s'est déroulée peu à peu sous les yeux des antiquaires, et maintenant l'on possède des matériaux suffisants, pour une ample notice biographique du hardi découvreur des royaumes de Canada, de Saguenay et de Hochelaga.

La liste ci-jointe fera connaître les hommes distingués, auxquels le public canadien est redevable de ces richesses historiques.

LISTE DES DESSINS QUI DOIVENT ACCOMPAGNER CET OUVRAGE.

1.—Le Portrait de Jacques Cartier.

2.—La flotte de Jacques Cartier, découvrant le fleuve St. Laurent (1534.)

3.—Les vaisseaux de Jacques Cartier, arrivés à l'Isle d'Orléans. (1535.)

4.—Les noms des 75 compagnons et marins de Jacques Cartier.

5.—La maison seigneuriale de Jacques Cartier au village de Limoilou.

6.—Conférence entre Jacques Cartier et les sauvages de Stadacona. (Mai 1536.)

HISTORIQUE DE CES DESSINS.—*Portrait de Jacques Cartier.*

L'original du Portrait de Jacques Cartier se trouve à l'Hôtel-de-ville de St. Malo.—La toile mesure environ sept pieds sur cinq. On ignore quel en est le peintre—En 1847, la Societé littéraire et historique de Québec chargea M. le maire de St. Malo de faire exécuter pour la société une copie de ce tableau. Ce travail fut confié à Mr. Amiel, artiste distingué, demeurant à Paris. Dès l'arrivée de ce tableau en Canada, la vue de ce portrait réveilla de nouveau le souvenir des voyages et des gloires de l'illustre marin, et aussitôt les places publiques et les institutions se décorèrent, à l'envi les unes des autres, du nom de Cartier. On eut l'heureuse idée, en Canada, de faire faire plusieurs copies du tableau, car celui qui nous avait été envoyé de St. Malo avait péri dans l'incendie du Palais Législatif au mois de février 1854 ; ce fut Mr. Théophile Hamel, artiste canadien, qui fut chargé de faire ces copies, reproduites depuis en grand nombre au moyen de la lithographie.

La flotte de Jacques Cartier, découvrant le fleuve St. Laurent.

Ce tableau se trouve à la salle des marines dans la galerie de Versailles. Il paraît avoir été commandé par le roi Louis Philippe en 1848. Il est dû au pinceau de Gudin, célèbre peintre de marine ; il paraît avoir rapport au premier voyage de Cartier, puisque l'inscription, au bas de la gravure qui en a été faite ensuite, porte que Jacques Cartier venait de faire la découverte du fleuve avec trois vaisseaux ; ce qui est une erreur, car il n'avait que deux vaisseaux. Après un examen attentif, on ne connaît jusqu'à présent aucune localité, dans le fleuve ou dans le golfe, qui présente l'aspect qu'offre ce tableau. Car les montagnes, et les rochers qui y sont représentés ont tous une apparence volcanique ; ce qui ne convient nullement à aucune des portions de notre fleuve. A défaut d'autres renseignements, on est porté à conclure que cette peinture est plutôt idéale que réelle.

Mais comme tout ce qui touche à ces premières navigations est devenu précieux pour notre pays, nous n'avons pas hésité à lui donner place dans cet ouvrage.

Les vaisseaux de Jacques Cartier, arrivés à l'Ile d'Orléans, lors de son second voyage en 1535.

Ce tableau est d'autant plus intéressant, qu'il indique avec assez de certitude l'endroit précis où Jacques Cartier aborda avec sa flotte de trois vaisseaux, lors qu'il mit à l'ancre au bas de l'île d'Orléans. —Voici ce qu'on lit, à la page 32 du volume des voyages de découvertes de Cartier, imprimé à Québec en 1843.

Après avoir décrit l'Ile de Bacchus (l'isle d'Orléans) il dit : " Nous " étant posés et à l'ancre entre la dite isle (l'Ile d'Orléans) et la terre " du nord, (aujourd'hui la côte de Beaupré) fûmes à terre et portâmes, " les deux hommes que nous avions pris le précédent voyage, &c."

En effet, la gravure représente ces trois vaisseaux à l'ancre, et les voiles à demi ferlées.

Une chaloupe se dirige vers la terre du nord—Malgré la petitesse des figures qui se trouvent dans cette chaloupe, l'on reconnaît celle de Cartier, par son profil devenu si familier de nos jours en Canada.

Les 75 compagnons et marins de Jacques Cartier.

Ce document, aussi rare que précieux, à été trouvé dans les archives de la marine, à St. Malo. On ne doute aucunement qu'il ait été rédigé de la propre main de Cartier, puisqu'il porte sa signature. On a fait en Canada plusieurs tentatives pour déchiffrer, d'une manière satisfaisante, cette ancienne écriture du seizième siècle ; mais les variantes de chacun de nos archéologues n'ont pu rien produire de bien satisfaisant ; le hasard seul est venu à notre secours au moyen du document qui suit.

La maison seigneuriale de Jacques Cartier au village de Limoilou.

En 1853, Mr. le chevalier Cunat eut la bienveillance, à la demande de la société, de faire faire un dessin représentant cette antique ruine, encore bien conservée, quoique son existence date de plus de trois siècles. —Plusieurs copies en ont été lithographiées et répandues en Canada.

Depuis lors le Révérend Père Martin, supérieur des Jésuites en Canada, dans un voyage qu'il fit en Europe, eut la curiosité de se rendre à St. Malo, pour voir cette ruine, qu'il trouva quelque peu différente du dessin original. Après un examen minutieux, il en fit un dessin plus exact, qui est celui-là même que l'on reproduit maintenant.

Québec, 10 Mai 1843.

MONSIEUR LE MAIRE,

La Société Littéraire et Historique de Québec en Canada, a l'honneur de vous adresser un exemplaire d'un recueil de documens qu'elle vient de publier, contenant les voyages entrepris pour la découverte du Canada, entre les années 1534 et 1542, par le célèbre Jacques Quartier, natif de la ville de St. Malo, ainsi que par d'autres marins distingués de cette époque.

Jacques Quartier, votre compatriote, est pour nous le Colomb du Canada ; car ce fut Quartier, qui, après avoir exploré en tous sens le magnifique golfe de St. Laurent, reconnut véritablement le Canada, et apporta la conquête de ce vaste pays à sa patrie, par le soin qu'il eut d'en prendre possession au nom de la France.

Les relations des voyages de ce hardi navigateur étaient devenues tellement rares, qu'à peine étaient elles connues, même dans le pays qu'il avait lui-même découvert. La Société Littéraire de Québec s'est donc empressée de publier tout ce qu'elle a pu recueillir sur ces navigations, dans la vue de perpétuer la mémoire et les souvenirs du célèbre malouin. La cité de St. Malo peut bien se féliciter à juste titre de lui avoir donné naissance, et nous pensons que le recueil qui vous est envoyé ne sera pas sans intérêt pour les habitans de sa ville natale.

Soyez persuadé, Monsieur, que rien ne pourrait nous causer plus de satisfaction, s'il vous était possible de nous procurer une biographie complète et détaillée de toute la vie de Jacques Quartier, ou, à défaut de sa biographie même, ce que votre ville de St. Malo aurait pu conserver en fait de traditions à son égard.—On ignore en Canada l'époque de sa naissance, ainsi que celle de son décès. Quelques mémoires disent qu'il mourut de chagrin, au retour de son 3e. voyage du Canada en 1542 ; d'autres prétendent qu'il était encore vivant, plusieurs années après cette époque. Enfin, Monsieur le maire, tout ce que vous pourriez nous procurer, soit par vous même, soit par les recherches de MM. les antiquaires de votre ville, ou parmi les anciennes familles qui l'habitent, en fait de mémoires écrits, ou de livres imprimés, sera reçu avec la plus vive reconnaissance.

Je prends la liberté de vous adresser deux autres exemplaires de ce recueil, dont l'un pour la bibliothèque principale de votre ville, et l'autre pour M. le curé ou autre ecclésiastique principal du lieu.

Si toutefois vous faites l'honneur à la Société de lui adres-

ser quelque envoi de manuscrits, livres ou documents quelconques, veuillez bien avoir l'obligeance de les adresser comme suit :—

" A M. le Supérieur du Séminaire des Missions Etrangères à Paris."

St. Malo, le 12 Mars, 1844.

(Département d'Ille et Vilaine.)

Le Maire de la ville de St. Malo, Chevalier de l'ordre Royal de la Légion d'honneur, à Monsieur G. B. Faribault, Vice-Président de la Société Littéraire et Historique, à Québec.

MONSIEUR,

Je n'ai reçu que le 21 septembre dernier, la lettre dont vous m'avez honoré, sous la date du 11 mai 1843 ; ce retard, que vous ne pouviez prévoir, m'a empêché de profiter du retour à Québec de Mr. Hamel ; comme ce négociant devait quitter la France en Juillet, je n'ai pu vous écrire par lui.

Votre lettre, Monsieur, et la brochure qui l'accompagnait, ont fait renaître parmi nous les souvenirs d'une époque glorieuse pour notre ville, souvenirs qui, depuis, ont encore été ravivés par l'envoi, que vous avez bien voulu nous faire, de quelques parties des débris du vaisseau que notre célèbre compatriote fut contraint d'abandonner, au commencement du printemps de 1536, dans le *hable* de Sainte-Croix sur la rivière St. Charles, où il avait mis ses trois navires à *sauveté*. Je viens donc, au nom de mes concitoyens, et au mien en particulier, vous témoigner toute notre gratitude pour ces précieux objets, que nous léguerons religieusement aux générations malouines qui nous succèdcront.

Avant le funeste traité de 1763, qui fit effacer le nom de *Nouvelle-France* des cartes de l'Amérique, nos ancêtres portaient avec orgueil leurs regards vers cette belle et vaste contrée, que leurs aïeux avaient découverte, et de laquelle ils dotèrent leur Patrie. Héritiers de leur gloire, s'il ne nous est plus donné d'envisager de la

même manière qu'eux, cette riche colonie que la France a perdue, après une possession de 229 ans, du moins les sympathies qu'ils éprouvaient pour ses habitans, dont les noms, en grande partie, nous rappellent une commune origine, se sont transmises sans s'altérer parmi leur descendans : de là, monsieur, les vœux que nous ne cessons de former pour le bonheur des Canadiens, quelles que soient les destinées que l'avenir réserve à leur intéressante patrie.

Voulant répondre aux désirs que vous m'exprimez, de vous faire connaître ce que notre ville de Saint-Malo pourrait posséder en manuscrits ou traditions concernant le célèbre Jacques Cartier, j'ai engagé monsieur Charles Cunat, ancien officier de la marine et chevalier de la légion d'honneur, mon adjoint et mon ami, à faire de nouvelles recherches dans nos archives, réduites à la vérité de beaucoup, par suite des excès de 1793. Avant cette époque, l'évêque et le chapitre étaient les seuls seigneurs, conjoints et par indivis, de la ville de Saint-Malo, et ils en possèdaient les titres : ayant été obligés de fuir à l'approche de cette terrible période, presque tous leurs registres et titres en papier furent brulés ; ceux en parchemin servirent à la fabrication de gargousses.

Lorsque votre livre de la découverte du Canada nous est parvenu, nous ne possédions de notre illustre compatriote, qu'une notice incomplète et son portrait, qui décore dans notre hôtel-de-ville, la galerie consacrée aux grands hommes que notre localité a fournis à l'histoire : aujourd'hui, grâces à vous, monsieur, et aux travaux nécrologiques de mon collègue, les particularités qui se rattachent à la naissance et à la vie du célèbre navigateur se sont étendues ; vous pourrez en juger par les deux gazettes de notre ville qui accompagnent ma lettre. J'y ai fait publier le procès-verbal de la réception des débris de la *Petite Hermine*, et tout ce que nos registres de l'état civil des 15e et 16e siècles nous ont procuré sur la famille Cartier.

Quoique Saint-Malo s'honore d'avoir produit des savans et des littérateurs distingués, aucun d'eux ne s'est occupé d'écrire

l'histoire, si palpitante d'intérêt, de cette ville remarquable par le rôle brillant qu'elle a été appelée à remplir à diverses époques. Toutefois, je manquerais à la reconnaissance, si j'oubliais de citer Mr. l'abbé Manet. Nous sommes redevables à ce savant antiquaire d'un volume sur les malouins célèbres, où se trouvent une notice historique de notre cité et un court article biographique sur le fameux navigateur, Jacques Cartier.

La ville possède maintenant, par le zèle empressé de Mr. Charles Cunat, l'expédition d'un acte qui vient d'être retrouvé parmi nos archives. Cet acte est sous la date du 26 novembre 1587, et au rapport de maître Estienne Grans et son collègue S. Lesier, notaires royaux à Saint-Malo. Jacques Odieure et Jacques Noël l'ont signé, et le sceau royal y est apposé. Cet acte, qui a pour but l'apurement des comptes et dépenses de la troisième expédition de Jacques Cartier au Canada, renferme : 1°. la copie des lettres patentes accordées par François 1er. le 17 octobre 1540, au célèbre navigateur ; 2o. la nomination de maître Robert le Goupil, conseiller et lieutenant en l'amirauté de France à la Table de marbre, au Palais de Rouen, pour voir et entendre les comptes, faits par Jacques Cartier, de la recette et de la dépense pour son voyage ès pays de Canada ; cette pièce est du 3 avril 1543 ; 3o. et enfin le compte *arrêté*, par le dit Robert Goupil et quatre commissaires adjoints sous la date du 21 juin, 1544, qui fixe à 39,981 livres 4s. 6d. les frais de la troisième expédition de Jacques Cartier au Canada, avec cinq navires.

Les lettres patentes de François 1er. sont contresignées de Henry, fils ainé du Roi, Dauphin de Viennois, Duc de Bretagne et comte de Valentinois, et contiennent ce qui suit :—" A nos amés " et féaux les gens de nos conseil et chancellerie, Généraux, Lieu- " tenants et à tous nos autres Justiciers et Officiers de nos pays et " Duché, Salut : Nous vous mandons que suivant le contenu des " Lettres Patentes du Roi, notre très-honoré Seigneur et Père, " données en ce lieu de St. Pris, le 17ème jour de ce présent mois.

" aux quelles ces présentes sont attachées sous le contre scel de notre " chancellerie ; Vous ayez incontinent à les délivrer, rendre et " bailler entre les mains de *notre cher et bien amé Jacques Cartier*, " *Capitaine Général et Pilote de tous les navires et autres Vaisseaux* " *de mer que le Roi, notre Seigneur et Père, envoie ès pays de Canada*, " *de Ochelaya et jusqu'en la terre de Saguenay*, pour les causes " déclarées aux dites lettres. Donné à St. Pris le 20e jour d'octobre l'an 1540 : ainsi signé par monseigneur le Dauphin et Scellé de cire rouge."

Les cinq navires destinés à faire partie de la troisième expédition furent équipés à Saint-Malo, où ceux des deux précédents voyages l'avaient été. Suivant l'accord passé entre François 1er et Jacques Cartier, ces navires jaugeaient ensemble 400 tonneaux. Du nombre, se trouvaient l'Hermine et l'Emérillon que le Roi permit de reprendre : ceci prouve bien évidemment que ce fut la *Petite Hermine*, ainsi qu'on le conjecturait, qui avait été abandonnée au lieu de Ste. Croix sur la rivière St. Charles. Par la date des lettres patentes, notre navigateur ne put quitter la France qu'en l'année 1541, et non en 1540, ainsi que le portent la traduction de Hakluyt et la notice de M. Manet. Ce qui le prouve d'une manière péremptoire, c'est que le 11 avril de cette année-là, il tenait sur les fonts baptismaux en l'église cathédrale de Saint-Malo, une fille à Charles Lehuchestel, à laquelle il donnait le nom de Jacquette. Au reste, cette date de 1541, s'accorde avec ce que Hakluyt lui-même dit du voyage du Sieur de Roberval, qui fit voile de la Rochelle, le 16 avril 1542, et qui n'atteignit le hâvre de Saint-Jean que le 8 juin. " Durant notre long séjour en ces endroits, Jacques Cartier et sa " compagnie venant du Canada, où il avait été envoyé *l'année d'au-* " *paravant* avec cinq navires, arriva au même hâvre." La réclamation faite au Roi par Jacques Cartier, pour l'excédant de ses dépenses sur les 31,300 livres, qu'il avait touchées, et la nomination de M. Robert Goupil, par le Roi, afin de lui faire rendre justice, attesteraient seules que Jacques Cartier ne retourna point en Canada avec

le Sieur de Roberval, ainsi que quelques écrivains l'ont avancé ; mais, outre ces actes, nous trouvons encore sur nos registres des naissances que Jacques Cartier assistait, le 25 mars 1543, au baptême de Jacquette Patris, à laquelle il servait de Parrain, et lui donnait son nom. De ces 31,300 livres, trente mille avaient été comptées à Jacques Cartier par les mains de maître Jean Duval, Trésorier de l'Epargne, et treize cents par celles du dit La Roque Sieur de Roberval.

Vous apprécierez sans doute, monsieur, la différence qui survint dans les titres dont Jacques Cartier fait précéder ses noms, à deux époques remarquables de sa vie, et je suis disposé à croire, avec M. Ch. Cunat, que notre grand navigateur avait été anobli. Suivant Marc Vulson, chevalier, Sieur de la Colombière, en sa science héroique, qui divise la source de la noblesse en douze moyens ou principes, la noblesse s'acquérait par la navigation et découverte de terres étrangères ; dès lors, il est présumable que François 1er récompensa par des lettres d'anoblissement, celui qui lui avait donné une autre France. Louis XIII, par son édit du 6 mai 1628, quatre-vingts ans après, crut devoir anoblir douze des associés de la compagnie qui s'était formée pour le commerce du Canada.

Au titre *de noble homme*, Jacques Cartier ajoutait celui de *Sieur de Limoilou*, ainsi que le prouve un acte du 29 de septembre 1549. Ce nom de Limoilou est celui d'un village sur la côte, à une lieue E. N. E. de Saint-Malo, où se trouve encore une maison antique, bien conservée, à laquelle on arrive par deux portes près l'une de l'autre, et de formes très-anciennes ; elles sont à l'entrée du dit village et conservent dans tout le pays le nom *de portes Cartier* ; près de la plus grande, on aperçoit encore une pierre qui représentait autrefois des armoiries en relief ; mais, de nos jours, elles sont entièrement effacées ; là encore la terrible époque de 1793 a laissé sa trace.

J'ai éprouvé un bien grand bonheur, monsieur, en entrant avec vous dans ces détails sur le grand homme qui appartient à nos deux

pays ; au vôtre, parcequ'il en fut le fondateur, et au nôtre, parce qu'il y reçut la vie. Sa mémoire, en survivant toujours au milieu de nos populations, entretiendra entre elles, j'en suis convaincu, les sentiments d'une cordiale fraternité que, de notre côté, nous n'avons jamais cessé de porter aux Canadiens.

J'ai l'honneur d'être, avec la plus haute considération,

Monsieur le Vice-Président,

Votre très-humble et obéissant serviteur,

HOVIUS.

Saint-Malo, le 24 mars, 1846.

MONSIEUR LE MAIRE.

Pour me conformer à vos intentions de répondre au vœu de Monsieur Faribault, Vice-Président de la Société Littéraire et Historique de Québec, j'avais envoyé à Paris, afin d'en avoir une copie exacte, le précieux document que la ville possède, concernant le troisième voyage de Jacques Cartier au Canada. Aujourd'hui grâce à l'obligeant empressement de l'érudit Monsieur D'Avezac, chef du bureau des archives de la marine, nous possédons la transcription entière et correcte de cette pièce si intéressante, qui remplace dans nos cartons, les extraits que j'en avais faits.

Aux renseignemens que vous avez été assez heureux de pouvoir donner, il y a deux ans, *sur notre illustre compatriote, M. Faribault* vous demande, dans la lettre du 26 de janvier dernier, le compte fourni par Jacques Cartier des recettes et dépenses de la troisième expédition de découvertes, ainsi que le jugement rendu à son sujet, par les délégués du Roi François 1er. Afin de répondre au désir de MM. les membres de la Société Littéraire et Historique de Québec, qui ont été si bienveillants pour la ville de Jacques Cartier, et dont M. Faribault est le mandataire, je vous propose, M. le maire, de leur envoyer un double de la copie que nous devons à M. D'Avezac, dans laquelle se trouvent précisément les pièces réclamées par M. Faribault ; ces pièces réunies à quelques

observations nouvelles, puisées dans nos archives et que je vais vous soumettre, jetteront une grande clarté sur les points historiques qu'il importe tant à nos amis du Canada de pouvoir éclaircir ; ils pourront, avec leur secours, *expliquer une contradiction apparente qui se trouve entre le recit du troisième voyage de Jacques Cartier et celui du voyage de Roberval.*

La relation incomplète que donne Hakluyt sur le dernier voyage de Cartier au Canada, détermine le départ de ce navigateur du port de St. Malo, au 23 mai, 1540. Le même auteur, dans son récit de la traversée que fit Roberval de La Rochelle à Québec, fixe son appareillage au 16 avril, 1542, et sa relâche à St. Jean de Terre-neuve, au 8 juin suivant ; dans ce hâvre Roberval, fut rejoint par Jacques Cartier, en retour pour France avec les trois navires qui avaient hiverné dans le fleuve St. Laurent.

Il résulterait par les deux dates données aux départs de St. Malo et de La Rochelle, que Jacques Cartier serait resté deux ans dans son expédition, tandisque dans la relation que donne Hakluyt du voyage de Roberval, il est dit :

" Durant notre long séjour au hâvre St. Jean, Jacques Cartier et " sa compagnie, venant du Canada, *où il avait été envoyé l'année* " *d'auparavant avec cinq navires*, arriva au même hâvre." Il y a donc évidemment une erreur d'une année, dans l'une ou l'autre des époques indiquées à chacune des expéditions ; mais laquelle des deux était inexacte ? voilà ce qu'il importait de connaître d'une manière positive.

Pour nous qui possédions, avec les renseignements que donnent nos archives, le mémoire de Jacques Cartier, il n'y avait plus aucune incertitude, sur les époques de départ et de retour de notre illustre concitoyen, ainsi que pour la durée du temps qu'il avait employé à ce dernier voyage. En effet, plusieurs actes qui se trouvent consignés sur nos registres de l'état civil, et que je vais rapporter, démontrent l'exactitude des dates inscrites au dit mémoire et aux pièces qui y sont annexées.

J'avais pensé d'abord que l'erreur commise par Hakluyt provenait du jour auquel Pâques était tombé; vous savez qu'alors, en solennisant cette grande fête, on célébrait aussi le premier jour de l'an : il n'en était rien. En 1541, Pâques arriva le 17 avril, et Jacques Cartier ne partit qu'en mai. Roberval avait bien levé l'ancre le 16 avril 1542, mais cette année-là, Pâques s'était trouvé le 9 de ce même mois ; en sorte que, dans les deux cas, on devait dater de l'année dans laquelle on était réellement entré.

La lettre patente du Roi François 1er à Jacques Cartier, pour sa troisième expédition, est du 17 octobre 1540, et l'apostille du dauphin, Henri, Duc de Bretagne, du 20 octobre 1540. De là, il reste démontré que l'armement des cinq vaisseaux ne fut commencé qu'après sa réception, et que par conséquent l'expédition ne mit en mer que l'année suivante, 1541. En effet, au commencement de cette année-là, le 11 avril, Jacques Cartier tenait sur les fonts de baptême, dans l'église cathédrale de St. Malo, une fille de Charles Le Huchestel et de Denise Des Granches, ses beaufrère et belle-sœur, et à laquelle il donna le nom de Jacquette : voilà bien l'année déterminée à 1541.

Jacques Cartier, après avoir réclamé 4,500 livres pour *L'Hermine* et *L'Emerillon*, ajoute : "Et en ce qui est du tiers navire, mettre " pour 17 mois qu'il a été au dit voyage du dit Cartier, et pour huit " mois qu'il a été à retourner quérir le dit Robertval au dit Canada, " au péril de nauleige, ce seront 2,500 livres, et pour les deux " autres qui furent au dit voyage, six mois à cent livres le mois, sont " douze cents livres." Hakluyt dit effectivement que Jacques Cartier ne garda que trois navires, les deux autres qui composaient l'expédition, après avoir débarqué leurs cargaisons, avaient été renvoyés presqu'immédiatement pour France, sous le commandement de Macé Jallobert, son beaufrère, et sous celui d'Etienne Nouel, son parent, tous deux excellents pilotes.

En continuant nos recherches, nous avons trouvé sur le registre des baptêmes : " Le samedi 21 octobre 1542, fut baptisée une fille

" à noble Ecuyer Reyné Morcau, seigneur de la Péraudière, lieute-
" nant du capitaine de la ville et du château de St. Malo et Damoi-
" selle Rose sa compagne épouse, et fut nommée Catherine par
" capitaine Jacques Cartier etc." Ainsi le 11 avril 1541, nous voyons que ce célèbre navigateur était à St. Malo, et qu'il s'y trouvait de nouveau le 21 octobre 1542; c'est donc entre ces deux dates, qui renferment un espace de 18 mois 10 jours, qu'il faut placer les 17 mois que le voyage a duré. Si nous partons du 23 mai, jour indiqué par Hakluyt, nous trouverons deux jours de moins pour parfaire dix-sept mois du calendrier au 21 octobre 1542; mais aussi, on comptera huit jours en plus de dix-sept mois, de 30 jours chacun. Enfin, si l'on adopte, ce qui est plus rationnel, que les 17 mois portés en ligne de compte par Jacques Cartier partaient du jour de son armement terminé, à celui de son désarmement, on reconnaîtra qu'ils peuvent parfaitement s'encadrer dans le temps qui s'est écoulé entre la rédaction des deux actes de l'état civil que nous avons rapportés, et conserver pour date du départ de St. Malo, le 23 mai, jour fixé par Hakluyt.

Maintenant il ressort du memoire de Jacques Cartier, qu'au printemps de l'année 1543, un navire fut envoyé au Canada, pour en ramener le sieur de Roberval. *

Il est positif aussi que le dit Roberval revint en France à la fin de cette année là, puisque le Roi ordonne, par sa lettre du 3 avril 1544, à maître Robert Le Goupil, nommé juge, de faire comparaître devant lui, *dedans huitaine après assignation*, Jacques Cartier et le sieur de Roberval.

Indépendamment de ces points historiques éclaircis, il restait

* On ne peut guère douter, d'après ce passage, que Cartier ne fût la personne chargée de cette mission; c'était par le commandement de François Ier qu'il faisait ce 4me voyage, son expérience dans les deux voyages précédents le qualifiant pour ces expéditions plus que toute autre personne.

Du printemps de 1543 à la fin de cette année-là, Cartier a pu faire le voyage avec le navire qui a été employé pendant huit mois.

encore celui de savoir si Jacques Cartier avait fait de nouvelles entreprises maritimes. Nous pourrions affirmer que ce grand navigateur n'a plus repris la mer, depuis son retour en octobre 1542, jusqu'au 15 octobre 1552, ce qui embrasse un espace de dix ans; durant cet espace, il ne s'est pas écoulé une année où l'on ne puisse, par des actes authentiques, justifier sa présence en nos murs.

De cette longue nomenclature d'actes, en voici deux que nous citons avec intention, parce qu'ils concernent Jacques Nouel et Jacques Odieure, successeurs l'un et l'autre de Jacques Cartier. Ils firent lever, à ce titre, par les notaires royaux, Etienne Gravé et Jules Lesien, établis à St Malo et à Châteauneuf, une expédition des titres originaux du troisième voyage du célèbre marin. Jacques Cartier était le parent du premier et l'allié du second, et le parrain de tous les deux. Je transcris ces actes suivant leur ordre de date.

" Le 27e. jour d'avril, 1547 après Pasques, fut baptisé un fils à " Michel Audieure et Perinne Jallobert, qui fut nommé Jacques " par noble capitaine Jacques Cartier, Bourgeois en la ville et cité " de St. Malo et Seigneur de Limoilou &c."

" Le jeudi 5 Février 1551, fut baptisé un fils à Jacques Nouel et " Servanne Le Doyen, qui fut nommé Jacques par noble homme " Jacques Cartier &c." Ainsi, le père et le fils avaient été, à 32 ans d'intervalle, tenus sur les fonts baptismaux par le capitaine général et pilote du Roi François 1er.

Jacques Nouel était petit-fils de Jehanne Cartier, tandis que Jacques Odieure avait pour aïeule maternelle, Allizon des Granches, femme du capitaine Macé Jallobert, et sœur de Catherine des Granches, dame de Limoilou, épouse de noble homme Jacques Cartier. Le dernier acte de nos registres, qui atteste la présence et l'existence du noble capitaine Jacques Cartier, est du 15 octobre 1552 ; à cette date ce grand homme avait 58 ans. Depuis, il n'est plus fait mention de lui ! cette absence de son nom, si souvent reproduit, que les familles malouines tenaient à honneur de faire inscrire à côté de celui de leur nouveau-né, me porte à croire, à

défaut des registres nécrologes qui nous manquent, que c'est vers l'âge de 60 ans, que notre célèbre compatriote a dû terminer sa glorieuse carrière.

Dans une précédente lettre, Monsieur le Maire, je vous avais rapporté un acte du chapitre de Saint-Malo, du 29 décembre 1549, par lequel Jacques Cartier, ajoutant le nom seigneurial de Limoilou, à son nom de famille, fonda dans la cathédrale un obit, moyennant la somme de 4 livres de rente, pour laquelle il hypothéqua sa maison et son jardin, situés *jouxte l'Hopital de St. Thomas*. Plus tard cette maison et ce jardin firent place à un bâtiment, plus spacieux et d'assez bon gout, qui servit, à différentes époques, de demeure aux gouverneurs de St. Malo. C'est aujourd'hui une dépendance de l'*Hôtel de France*, dont le propriétaire et le directeur, M. Gogué, a bien voulu me communiquer deux anciens contrats, lesquels mentionnent, l'un et l'autre, l'hypothèque donnée par notre grand navigateur. Le second de ces titres, qui est du 2 mai 1777, relate que le sieur Rouzier, vendeur, avait eu cet immeuble des successions de ses aïeuls paternels, qui l'avaient acquis eux-mêmes le 2 décembre 1714, d'Ecuyer Noël Danycan ; il stipule, en outre, que la vente est faite " à la charge à l'acquéreur, de payer, par chacun " an, au jour St. Gilles, trois livres 13 sols au receveur des obits " de l'église cathédrale de St. Malo, pour partie de l'obit fondé par " le feu sieur Jacques Cartier."

Enfin, pour terminer cette longue lettre sur notre illustre concitoyen, je vous ferai part, M. le Maire, d'une remarque intéressante sous le point de vue historique ; c'est que de tous les navigateurs de St. Malo, je n'ai vu sur nos anciens registres, y compris l'année 1575, que Jacques Cartier seul avoir pris le titre de capitaine ; ceux de ses parents ou alliés qui avaient commandé des navires de son temps ne l'employèrent jamais : ceci prouve que le rang de capitaine était éminent et que Cartier, par exception, conservait le sien qu'il tenait du Roi François Premier, en récompense de ses services.

Je suis avec la plus haute estime, Monsieur le Maire, votre très humble et devoué serviteur ; (Signé) Ch. Cunat.

Pour copie conforme,
Le Maire de Saint-Malo,
Chevalier de l'Ordre Royal de la Légion d'Honneur,
HOVIUS.

NOTES GÉNÉRALES

sur la vie et les trois expéditions de Jacques Cartier d'après les archives de l'Hôtel de Ville de Saint-Malo et les ouvrages de MM. Manet Livot et Cunat.

(PREMIER ENVOI.)

A M. le Président de la Société Historique et Littéraire de Québec, par M. C. Desmazières de Séchelles, ancien rédacteur du Commerce Breton, membre et correspondant de plusieurs sociétés littéraires.

SAINT MALO, Hôtel Dupuy Fromy,
Rue de Chartres, No. 11.
Ce 8 Xbre 1860.

Aussi loin que j'ai pu remonter dans les archives de la ville de St. Malo (dans lesquelles notre premier magistrat m'a permis de puiser à mon gré avec sa bienveillance habituelle), je n'ai trouvé dans les registres destinés aux naissances, aux mariages et aux décès qu'un *Jehan Cartier* époux de *Guillemette Beaudoin* et père de six enfants, dont l'ainé Jamet, James ou Jacques, naquit à St. Malo, le 4 décembre 1458. L'acte, d'un laconisme désespérant, ne porte que ces mots : 4 *décembre* 1458 *baptisatus extitit*

Cartier. * Ce fils épousa *Jeffeline Jansart*, et de ce mariage naquit, le 3 décembre 1494, le célèbre *Jacques Cartier*.

En 1519, âgé seulement de 25 ans, il épousa *Catherine Des Granches*, fille de *Jacques Des Granches connétable de la ville et cité de St. Malo*. *Cartier* dont les premières années, comme celles de tous les enfants de Saint Malo, s'étaient passées sur mer, *Cartier* qui avait même déjà fait plusieurs voyages à Terre-Neuve, songeait à doter son pays de nouvelles terres inconnues. S'étant présenté à *Philippe de Chabot*, grand amiral de France, il lui proposa d'aller explorer les terres de l'Amérique Septentrionale, désignées alors sous le nom de *Terres Neuves*, nom qui n'était pas encore donné exclusivement à la grande île située à l'embouchure du fleuve *Saint-Laurent*. François Ier, accueillant avec empressement les projets de *Cartier*, lui donna plein pouvoir de les exécuter. Muni de ses instructions, l'habile navigateur partit de Saint-Malo *le* 20 *avril* 1534, avec deux bâtiments de soixante tonneaux, accompagné des sieurs *Olivier Du Breuil*, † *Jacques Maingard* et plusieurs autres malouins ses parents et ses amis, en tout cent vingt-deux hommes d'équipage. *Messire Charles de Mouy* sieur de la Meilleraye, vice-amiral de France, qui était venu à Saint-Malo passer en revue les nefs et les équipages royaux, fit jurer aux nouveaux Argonautes de se bien et fidèlement comporter au service du roi, sous le commandement de *Jacques Cartier*.

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* Quoique l'acte soit en effet bien court, il est cependant plus long et plus complet qu'on ne le donne à entendre ici. Le voici en entier, d'après M. Ch. Cunat : " *Anno* 1458, *die quarta mensis decembris, baptisatus extitit Cartier, quem levarunt de sacro fonte Stephanus Beaudoin compater principalis et Petrus Vivien et Catherina Freto minores.*"

† M. Manet affirme que Olivier Du Breuil et Jacques Maingard étaient de la première expédition, sans dire sur quoi il s'appuie. Ce qui l'aura trompé sans doute, c'est le commencement de l'année au terme paschal.

Premier Voyage.

Faisant route à l'ouest, il tirait un peu vers le nord ; les vents furent si favorables que le 10 *mai* 1534, c'est-à-dire, presqu'un mois après son départ de Saint-Malo, *Cartier* aborda au cap *Bona Vista en l'île de Terre Neuve*, à peu près à l'endroit où, dix ans auparavant, le florentin *Verazzani* avait également relâché pour commencer à reconnaître le pays et à en prendre possession pour le compte de la France. Comme la terre était encore couverte de neige et la mer encombrée de glaces, *Cartier* descendit encore six dégrés‡ au sud-est, et entra dans un port auquel il donna le nom de port *Sainte-Catherine*. Delà il retourna au nord, et gagna *l'île aux Oiseaux*,‖ distante de *Terre-Neuve* d'une dizaine de lieues. *Cartier* ensuite contourna *Terre-Neuve* par le nord; entra dans le détroit de Belle-Isle, qu'il appela *Golfe des Châteaux*, et découvrit le continent d'Amérique. Il en prolongea la côte nord, qui est celle de *Labrador*, trouva plusieurs beaux ports et relâcha dans quelques-uns. *Le 11 juin*, il entra dans l'un de ces ports, et en prit possession en y plantant une croix et en lui donnant le nom de *Saint-Servain* ou *Saint-Servan*.* Dès qu'il s'aperçut que ce prétendu *Golfe des Chateaux* s'élargissait, à mesure que ses bâtiments s'avançaient à l'ouest, et qu'il allait bientôt perdre de vue les côtes méridionales, il s'éloigna des terres du *Labrador*, fit route au sud et vint attérir sur le cap *Double* ou d'*Ouble*,† aujourd'hui *Pointe Riche*. Sa route lui fit ensuite prolonger la pointe occidentale de Terre-Neuve, et le conduisit presqu'à l'ouverture du large passage qui donne accès dans le golfe *Saint Laurent*,

‡ L'auteur a voulu dire six lieues.

‖ Aujourd'hui *Funk Island*.

* Aujourd'hui *Baie des Rochers*, Rocky Bay, sur la côte du Labrador.

† Cette dernière orthographe est mauvaise. Cartier dit : " Où était un gros cap *double l'un dessus l'autre, et à cette occasion l'appelasmes cap Double*."

tout près de l'extrémité sud-est de Terre-Neuve, entre le cap *Raye* et le cap *Breton*. Le mauvais temps, qui l'obligea à s'écarter de la côte avant d'y arriver, le porta en vue de quelques petites îles peu éloignées de ce passage, dont il ne fit alors que soupçonner l'existence, mais qu'il devait découvrir à la fin de sa seconde campagne. Toutefois, comme doué d'une seconde vue, *Cartier* consigna ainsi son opinion sur le journal du bord : " *Je crois qu'il y a quelque passage entre la Terre-* " *Neuve et la terre de Brion ; s'il en était ainsi, ce serait* " *pour racourcir le temps et le chemin.*" Il fit ensuite route à l'ouest et vit le groupe des îles *de la Madeleine ;* il se détourna pour les visiter, mais croyant qu'elles tenaient au continent, il continua de se diriger à l'ouest et rencontra la côte occidentale du golfe *Saint-Laurent*, qu'il visita soigneusement dans l'espoir d'y trouver un passage.

Le 30 *juin* 1534, il mouilla dans le fleuve *des Barques*, aujourd'hui la rivière de *Miramichi*. De là *Jacques Cartier* se rendit dans un petit port qu'il nomma *Saint Martin*, et y demeura depuis le quatrième juillet jusqu'au douzième. Durant son séjour à *Saint-Martin*, l'intrépide navigateur alla mouiller dans une baie fort profonde et peu éloignée, dans laquelle il eut beaucoup à souffrir de la température, et qu'il nomma pour cette raison *Baie des Chaleurs*. Il fut fort content des habitants de ces rivages, avec lesquels il échangea quelques marchandises contre des pelleteries et des vivres. Une ancienne tradition rapporte que le castillan *Velasco* avait abordé dans ces parages avant notre navigateur Malouin, et que, n'ayant aperçu aucune apparence des mines qu'il cherchait avec une ardeur infatigable, il dit à ses compagnons : *Aca, nada,* (*ici rien*) mots que les sauvages répétèrent souvent à nos gens : ce qui leur fit croire que *Canada* était le nom de cette contrée. D'autres au contraire, avec plus de vraisemblance, font dériver ce terme du mot iroquois *kannata*, qui se prononce *Canada* et signifie : *amas de cabanes*. Ce sentiment est appuyé en particulier par le *Vocabulaire Canadien*, annexé à l'édition originale du second *voyage de Jacques Cartier*, *Paris* 1545. D'où nos Français s'imaginèrent sans doute que le nom, commun aux diverses bourgades qu'on leur montrait, était celui de toute la contrée.

Cartier, ne trouvant pas l'ouverture qu'il cherchait, remit à la voile. Il vint ensuite mouiller dans la baie de *Gaspé*, située très-près de l'embouchure du fleuve *Saint-Laurent*, et il la prit pour l'entrée d'une rivière. La veille de son départ (24 juillet 1534) *Jacques Cartier* prit solennellement possession des nouvelles contrées si heureusement découvertes, au nom de son souverain ; il plaça dans un lieu apparent une croix fort élevée, avec l'écusson de France surmonté de cet exergue en grosses lettres : *Vive le Roy de France.* Dans les fréquents rapports qu'il eut avec les naturels du pays, il sut leur inspirer une telle confiance, qu'un de leurs chefs consentit à lui confier deux de ses fils, *Taiguragny* et *Domagaya.*

Le 25 *juillet*, le vent devint bon, et les navires remirent sous voiles pour traverser le golfe et regagner *Terre-Neuve.* Toutefois les navigateurs firent, chemin faisant, quelques découvertes de minime importance, et ce ne fut qu'après bien des traverses qu'ils entrèrent *le* 9 *août* dans le hâvre des *Blancs Sablons.*

" . . . . *Nous partîmes de Blanc-Sablon le* 15 *août,* " *après avoir ouï la messe, et vînmes heureusement jusqu'au* " *mitan de la mer qui est entre Terre-Neuve et la Bre-* " *tagne, auquel lieu courûmes grande fortune par les vents* " *d'est ; laquelle nous supportâmes par l'aide de Dieu, et* " *du depuis eûmes fort bon temps, en sorte que le cinquième* " *jour de septembre de l'an susdit, nous arrivâmes au port* " *de Saint-Malo d'où nous étions partis..*

Les détails qui précèdent, empruntés à l'analyse qu'a faite le savant M. Rossel du journal de *Cartier*, permettent de suivre facilement le célèbre navigateur dans son premier voyage. *Le Pilote de Terre-Neuve*, publié par le dépot général de la marine, a consacré l'authenticité des découvertes de notre célèbre compatriote, en inscrivant les noms qu'il leur avait donnés au-dessous de ceux qui sont actuellement en usage. *M. Rossel* ne trouve pas aussi claire la description de la route suivie par *Cartier* après son départ de la baie de *Gaspé ;* il regarde néanmoins comme certain que, prenant pour un golfe le canal du fleuve *Saint-Laurent* situé entre la rive droite du fleuve et l'île d'*Anticosti*, il en traversa l'ouverture et chercha ensuite à pénétrer par le canal qui passe au nord de la

même île. On est fondé à croire qu'il s'avança jusqu'à la pointe occidentale, où il vit le canal s'élargir, et où il éprouva des courants violents qui durent lui indiquer que c'était l'embouchure d'une grande rivière.

Second Voyage.

Le 5 septembre 1534, *Cartier*, de retour à *Saint Malo*, avait dressé un rapport exact et circonstancié de tous les incidents et de toutes les découvertes de son premier voyage, et l'avait fait présenter à *Francois 1er*, par son protecteur déclaré, *Charles de Mouy* sieur de la Meilleraye, qui avait déjà été pour beaucoup dans la première expédition du célèbre malouin. "*Sa Majesté voulant le parachevement* "*de la découverte des terres occidentales estantes sous le cli-* "*mat et parallele des terres et royaume du dit Seigneur,* "*nomma Jacques Cartier capitaine et pilote général aux* "*prières et suppliques de noble homme, Charles de Mouy* "*vice-admiral des galères de France.*"

En conséquence le Roi ordonna d'armer et d'équiper pour quinze mois trois bâtiments, qui devaient composer la seconde expédition: *La Grande Hermine, la Petite Hermine* et le gallion l'*Emérillon*, et il en conféra à *Cartier* le commandement par une commission en date du 30 *octobre* 1534. Elle est ainsi conçue: "Philippe Chabot etc., etc., " admiral de France, etc., etc., au *capitaine* et pilote maistre " Jacques Cartier, de Saint Malo, salut! Nous vous avons " commis et député, commettons et députons, du vouloir et " commandement du Roy, pour conduire, mener et em- " ployer, troys navyres équipés et advitaillés chacun pour " quinze moys, au parachevement de la navigation par vous " ja commencé à découvrir oultre les Terres Neuves; et " en iceluy voyage, essayer de faire et accomplir ce qu'il " a plu à mon dit Seigneur vous commander et ordonner: " pour l'équipaige duquel vous achepterez ou fretterez à tel " prix raisonnable que adviserez etc, et selon que vous " congnoistrez être bon pour le bien de la dite navigation, " les dits troys navyres; prendrez et louerez le nombre de " pilotes, maistres et compaignons etc., qu'il vous semblera " estre requis et nécessaire pour l'accomplissement d'icelle " navigation. Desquelles choses, faire, équiper, dresser, " mettre sus, nous avons donné et donnons pouvoir, com-

" mission et mandement espécial ; avec la charge et super-
" intendance d'iceulx navyres, voyaiges et navigation, tant
" à aller que retourner. Mandons et Commandons à tous
" les dits pilotes, maistres, etc., vous obeyr et suyvre pour le
" service du Roy, en ce que dessus, comme ils feroient à
" nous-mêmes, etc. Donné soubz nos seing et sel d'armes,
" le pénultiesme jour d'octobre l'an 1534." (Voyez justifi-
cations ici jointes.) L'armement étant terminé vers le milieu *de mai* 1535, " le dimanche, jour et feste de la
" Pendecoste, seizième jour de may au dit an mil cinq
" cens trente cinq, du commandement du capitaine, et
" bon vouloir de tous, chacun se confessa et reçûmes tous
" ensemble notre Créateur en l'Eglise Cathédrale de Saint-
" Malo ; après lequel avoir reçu, fûmes nous présenter au
" chœur de la dite église devant révérend père en Dieu,
" monsieur de Saint-Malo, (Monseigneur François Bohier,
" évêque de Saint-Malo, aumônier ordinaire du roi
" François Ier.) lequel en son estat épiscopal nous donna
" sa bénédiction." §

Le mercredi 19, par un beau temps, la petite flottille mit à la voile, sous de fort heureux auspices. *Cartier* montait la *Grande Hermine* de 120 tonneaux et avait pour second *Thomas Frosmont.* Plusieurs gentilshommes désireux de chercher des aventures, avaient voulu le suivre en qualité de volontaires ; de ce nombre etaient plusieurs malouins, et entre autres *Jean Garnier sieur de Chambeaux, Macé Jallobert,* commandant la *Petite Hermine.* Puis venaient *Claude de Pontbriand,* échanson du dauphin, *Charles de la Pommeraye, Jean Poulet, Garnier de Chambeaux, de Goyelle;* et quelques autres. Le personnel pouvait donc se classer ainsi :

La *Grande Hermine* de 120 tonneaux. Capitaine général : *Jacques Cartier.*

Maître : *Thomas Fromont.*

La *Petite Hermine* de 60 tonneaux. Capitaine : *Macé Jalobert* ou *Jallobert* (de St.-Malo) beau-frère de *Jacques Cartier.* Maître : *Guillaume Le Marié,* aussi malouin.

L'*Emérillon* de 40 tonneaux : Capitaine *Guillaume Le*

§ Mémoires de Jacques Cartier.

Breton. Maître : *Jacques Maingart*, tous les deux de Saint-Malo.

Après quelques semaines de navigation, les vents contraires séparèrent les trois navires, qui ne purent se rejoindre que le 26 juillet, au havre de *Blanc-Sablon*, dans le détroit de *Belle-Isle*, indiqué comme lieu de rendez-vous en cas de séparation. Le 31, les trois navires, réunis depuis quelques jours, donnèrent dans le fleuve *Saint-Laurent* et découvrirent le cap *Tiennot*, ‡ aujourd'hui *Mont-Joli*. Le 1*er août*, la *Grande Hermine* fut contrainte par le mauvais temps de se réfugier dans le port *Saint-Nicolas* ; *Cartier* y planta une croix pour marque, avec les armes de France, et y demeura jusqu'au 7 pour entrer dans une belle et grande baie couverte d'îles verdoyantes qu'il nomma *Saint-Laurent*,† en commémoration du saint dont la fête tomba ce jour. Après s'être approché le 15 de l'île d'*Anticosti*, qu'il nomma île de l'*Assomption*, il remonta le fleuve, entra le 1er septembre dans la rivière de *Saguenay*, dont il ne fit que reconnaître l'embouchure, et, continuant ses explorations, il mouilla le 14 " *sur un affourc d'eau, fort beau et plaisant, auquel* " *lieu il y a une petite rivière et hable de barre, marinant* " *de 2 à 3 brasses qu'il trouva propice pour mettre ses* " *navires à sauveté.*" C'est proche de cet endroit que la ville de *Québec* a été bâtie. La petite rivière, où les vaisseaux de *Cartier* hivernèrent, reçut le nom de *Saint-Charles*, ‖ qu'elle porte encore aujourd'hui, et le lieu où *Cartier* débarqua prit celui de *Sainte-Croix*, parce qu'il y était arrivé le 14 *septembre*, jour où les catholiques fêtent l'exaltation de la Sainte-Croix. Le lendemain,* il reçut la visite d'un chef du pays, et comme ils avaient avec eux

‡ Il l'avait découvert l'année précédente. Voyez premier voyage, ch. XXII.

† Aujourd'hui la baie *Sainte-Geneviève*.

‖ Ce n'est pas Jacques Cartier qui l'a appelée Saint-Charles ; ce sont les Récollets, plus tard.

* Cartier dit "le *lendemain*" ; mais c'était le lendemain du 7, et non le lendemain du 14, comme on le donne à entendre ici. Voyez 2nd voyage, ch. III.

Taiguragny et *Domagaya*, ces deux sauvages qui avaient appris notre langue par la fréquentation des Européens et leur voyage en France, contribuèrent à établir des relations d'amitié entre les Français et les naturels. Le chef qui était venu rendre visite à *Jacques Cartier* s'appelait *Donnazona ;* il pria le capitaine général " *de* " *lui donner ses bras pour baiser et accoller, qui* " *est leur mode de faire chère en la dite terre de Canada.*" *Le* 19, le capitaine général laissa ses deux plus forts vaisseaux, la *Grande Hermine* et la *Petite Hermine* à *Sainte-Croix*, et partit sur l'*Emerillon*, accompagné seulement de *MM. de Pontbriand*, de la *Pommeraye* et de *Goyelle*, * pour aller à la découverte du village d'*Hochelaga*, sur les ruines duquel a été bâtie depuis la ville de *Montréal*, à plus de 150 lieues marines de l'embouchure du fleuve. " *Le capitaine général fit planter balises et* " *marches pour plus clairement mettre les navires en* " *sûreté.* " *Et le lendemain entra ses deux plus grands* " *navires dans le dit hable et rivière, et le Gallion fut* " *laissé en rade pour le mener à Hochelaga.*" Il arriva le 29 à l'extrémité du lac *Saint-Pierre*, où il fut arrêté par une barre, qui traversait le canal dans lequel il voulait passer. *Jacques Cartier* se décida alors à " *victuailler et* " *accoustrer les barques et mettre victuailles pour le plus* " *de temps possible*," et continua son voyage d'exploration, accompagné, comme nous venons de le dire, de la Pommeraye, de Pontbriand, de la Godelle † et de plus de Jean Gouyon, de Jean Poullet, de Macé Jallobert et de Guillaume Le Breton, en tout vingt-huit personnes. ‡ Ils

* La preuve qu'il y avait encore bien d'autres personnes qui étaient du voyage, c'est que Cartier, en quittant le Gallion au lac Saint-Pierre pour prendre les barques, prit avec lui partie des gentilshommes, savoir : " Claude du Pont Briand, Charles de la Pommeraye, Jean Goyon, Jean Poulet, et 28 maryniers, y compris Macé Jallobert et Guill. Le Breton," ce qui faisait 33, avec Cartier.

† Dans la relation de Cartier, il n'est pas plus question de *La Godelle* que de *La Goyelle.*

‡ Voyez plus haut Note 1re.

arrivèrent *le 2 octobre* à *Hochelaga*, et il visita le même jour § a montagne au pied de laquelle était placé un village qu'il nomme *Mont Royal.* ‖ Les habitants de cette bourgade reçurent parfaitement les intrépides navigateurs, et célébrèrent leur arrivée par des jeux et des fêtes. Quelques auteurs ont cru que notre célèbre malouin s'était avancé jusqu'à la grande cataracte de *Niagara*, mais c'est une grossière erreur. Après avoir exploré la contrée et fait alliance avec les principales tribus du pays, *Cartier* partit d'*Hochelaga le 5 octobre*, pour retourner à *Sainte-Croix* où il arriva le 11, et se disposa à y passer l'hiver ; c'est alors qu'il donna la dernière main au fort que ses compagnons avaient élevé pendant son absence. "*Durant le voyage de Jacques Car-*
"*tier les maîtres et mariniers qui étaient restés à la garde*
"*des deux navires, avaient fait un fort tout clos de grosses*
"*pièces de bois plantées debout, et tout à l'entour garni*
"*d'artillerie et bien en ordre, afin de se défendre contre tout*
"*pays.*"

La rigueur et la prolongation de l'hiver, le manque de vivres frais, lui firent perdre en peu de temps vingt-cinq hommes de ses équipages. Le scorbut sévit avec une telle force sur les autres, que des cent-dix hommes qu'il avait au milieu de février 1536, il n'y en eut pas dix qui ne fussent atteints de ce redoutable fléau. Mais écoutons *Cartier* lui-même nous raconter les maux de ses compagnons : "*De-*
"*puis la mi-novembre jusqu'au dix-huit d'avril, avons été*
"*continuellement enfermés dedans les glaces, lesquelles*
"*avaient plus de deux brasses d'épaisseur ; et dessus la*
"*terre y avait la hauteur de quatre pieds de neige et plus :*
"*tellement qu'elle estoit plus haute que les bords de nos na-*
"*vires, lesquelles ont duré jusques au dit temps : en sorte*
"*que les breuvages estoient tous gelés dedans les futailles et*
"*par dedans des dits navires. Auquel temps, nous dé-*
"*céda jusques au nombre de vingt-cinq personnes des prin-*

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§Cartier dit : "Le lendemain au plus matin." ch. VII.

‖Ce n'est pas le village, mais la montagne qu'il nomma Mont-royal. "Nous nommasmes icelle montagne Mont-Royal."

" *cipaux et bons compaignons qu'eussions, lesquels mou-*
" *rurent de la maladie susdite : et pour l'heure y en avoit*
" *plus de quarante en qui on n'espéroit plus de vie, et le par-*
" *dessus tous malades, que nul n'en estoit exempté, excepté*
" *trois ou quatre. Mais Dieu par sa sainte grâce nous re-*
" *garda en pitié, et nous envoya connaissance et remède de*
" *nostre guérison et santé.*"

Ce moyen inespéré de guérison fut fourni aux malheureux compagnons de *Cartier* par un sauvage, qui, les ayant quittés quelque temps auparavant, les jambes enflées, et dans un état effrayant, revint quelques jours après se présenter à eux très-bien portant. Il attribua son rétablissement à l'usage qu'il avait fait des feuilles et de l'écorce d'un certain arbre, qu'il indiqua à *Cartier*. Celui-ci fit abattre l'arbre [et l'employa en entier] au traitement de ses équipages : " *Car après qu'ils en eurent bu, ils*
" *eurent l'avantage, qui se trouva être un vray et évident*
" *miracle. Car de toutes maladies de quoy ils estoient*
" *entachés, après en avoir bu deux ou trois fois, recouvrèrent*
" *santé et guérison. Cet arbre avait nom en langage*
naturel, annedda." C'est l'épinette blanche.

Dès que ses équipages furent en état de supporter les fatigues du voyage, *Cartier* fit ses dispositions de départ, pour revenir en France. *Dès le 21 avril,* * il prit la résolution d'abandonner la *Petite Hermine*, à cause des pertes nombreuses qu'il avait faites en ses hommes d'é-

[] Cartier dit tout simplement : " Domagaya (celui-là même qui avait été guéri) envoya deux femmes avec notre capitaine pour en quérir, lesquels en apportèrent neuf ou dix rameaux." C'est qu'en effet Domagaya lui dit qu'il s'était guéri "*avec le jus des feuilles de cet arbre.*"

* Cartier ne dit pas précisément qu'il prit cette résolution le 21 d'avril : " Le lendemain, dit-il, (c'est à-dire le
" 22 d'avril) arriva le Donnacona, lequel amena en sa com-
" pagnie grand nombre de gens du dit Stadaconé, ne
" savions à quelle occasion, ni pourquoi. Mais comme on
" dit : qui de tous se garde, et d'aucuns eschappe. Ce qui
" nous estoit de nécessité : car nous estions si affaiblis,
" qu'il nous a fallu laisser un de nos navires au dit lieu
" de Sainte-Croix." (Ch. XIX.)

quipage. En conséquence, il retira de ce navire tout ce qui pouvait lui être de quelque utilité, et fit transporter ce matériel à bord de la *Grande Hermine* et de l'*Emerillon*, ne laissant absolument que la carcasse de la *Petite Hermine*. Cette carcasse a été retrouvée le 26 *septembre* 1843. Quelques parcelles en ont été détachées pour le musée de St. Malo, où on les voit encore aujourd'hui.

Le 6 mai les deux navires mirent à la voile, emmenant neuf chefs des naturels, que l'on avait surpris par stratagème ; les historiens ont conservé trois noms des plus célèbres d'entre eux : *Donnacona*, *Taiguragny* et *Domagaya*. Quelques auteurs ont révoqué en doute l'enlèvement de ces sauvages. Le fait n'est pourtant que trop vrai. On en trouve la preuve dans l'acte de baptême de trois d'entre eux, les seuls qui n'eussent pas succombé, deux ans après leur arrivée en France : " *Ce jour, Notre* " *Dame, 25e mars de l'an* 1538, *furent baptizés trois sau-* " *vages hommes, des parties du Canada, prins au dit pays,* " *par honneste homme Jacques Cartier, capitaine pour le* " *Roy notre Sire, pour descouvrir les dites terres, etc., etc.*"

Tout en faisant route vers la France, le capitaine général se livrait à de nouvelles explorations, et relâcha dans la baie des Trépassés sur la côte de *Terre-Neuve*. *Jacques Cartier* passa par le canal qui est au sud d'*Anticosti* et qu'il avait pris pour un golfe en 1534. Il vint ensuite chercher le passage qu'il avait supposé, à la même époque, devoir exister au sud de *Terre-Neuve*, et compléta par cette dernière découverte celle du fleuve *Saint-Laurent*. Là il prit de l'eau et du bois et quittant cette baie le 19 *juin*, jeta l'ancre dans la rade de St. Malo, le 16 juillet 1536, après avoir doté son pays d'une immense région, à laquelle il venait de donner le nom de *Nouvelle-France*.

Il est vrai que quelques pêcheurs malouins, dieppois et basques avaient, dès les années 1495 et 1504, découvert quelques-uns des parages que notre célèbre compatriote venait de parcourir, que *Jean Cabot et ses trois fils* en 1497, *Gaspard Corteréal* en 1500, quelques marchands de *Bristol* en 1502, *Jean Denys* et *Velasco* en 1506 et *Thomas Aubert* en 1508, y avaient fait de courtes visites, que le baron de *Léry* avait voulu en 1518 établir une colonie dans l'île de *Sable*, que les frères *Parmentier* en 1526

avaient découvert l'île *Royale* ou du cap *Breton ;* et enfin que *Jean Verazzani*, déjà connu par d'autres découvertes, avait fait du côté du golfe *Saint-Laurent* quelques reconnaissances fort utiles : "mais, dit le Père *Charlevoix*, notre Malouin, né observateur, indépendamment de la gloire qu'on ne peut lui refuser d'avoir le premier remonté le fleuve *St. Laurent*, fit à lui seul plus que tous ces personnages ensemble ; et abstraction faite des contes et du merveilleux dont il s'avisa, à l'exemple de presque tous les voyageurs, d'embellir sa relation, ses mémoires méritèrent longtemps de servir de guides à tous ceux qui entreprirent de naviguer dans ces régions glacées." *Le dictionnaire littéraire de* 1789, si estimé, corrobore encore cette opinion en disant à l'article *Cartier :* " *Cartier fit plus que de découvrir le Canada, il visita tout le pays avec beaucoup de soin et laissa une description exacte des îles, des côtes, des ports, des détroits, des golfes, des rivières et des caps qu'il reconnut. Nos marins se servent encore aujourd'hui de la plupart des noms qu'il donna à ces différents endroits.*"

Quelques auteurs, et *Champlain* entre autres, ont prétendu que *Cartier*, après son retour, en présentant *Donnacona* au roi, essaya * de dégoûter le monarque du *Canada*, et de le dissuader d'y penser d'avantage : mais ce sentiment ne s'accorde en aucune sorte avec la manière dont *Cartier* lui-même s'exprime dans ses écrits, ni avec ce qu'on en lit dans les diverses relations de ses aventures.

Mais le meilleur démenti donné à ces faux rapports fut la résolution bien déterminée que prit, quelque temps après, *François Ier.*, de former une troisième expédition maritime, cette fois sur une plus grande échelle que les deux premières ; et, pour preuve que Cartier était toujours dans les bonnes grâces de son souverain, il suffit de jeter les yeux sur ses lettres patentes en date du 17 octobre 1540 : " *Notre cher et bien aymé Jacques Cartier a trouvé*

*Champlain ne dit pas que Cartier essaya de dégouter du Canada François I., il ne fait que constater le découragement de ce grand capitaine, auquel découragement il attribue tout naturellement l'abandon des projets d'établissement en Canada. Voyez Champlain, éd. 1632, pp. 11, 12.

" *ces pays, ainsy qu'il nous a rapporté, garnis de plusieurs* " *bonnes commoditez, les peuples d'iceulx bien formez de* " *corps et de membres, et bien disposez d'esprit et entende-* " *ment ; desquels il nous a amené aucun nombre, que* " *nous avons par longtemps fait instruire en nostre saincte* " *foi ; etc.*"

La véritable cause pour laquelle la cour de France différa pendant quatre années encore, ajoute M. Manet, à établir une colonie, fut qu'on n'avait trouvé en cette contrée aucune apparence de mines, † et qu'alors, plus encore qu'aujourd'hui, une terre étrangère qui ne produisait ni or ni argent, n'était comptée pour rien. Celui qui cependant contribua le plus à vaincre les longues résistances que cette troisième expédition rencontra à la cour, fut un gentilhomme nommé *François de la Roque*, seigneur de *Roberval*, que *François Ier* avait coutume d'appeler : le Petit Roi de *Vimeu*, à cause de la grande considération dont il jouissait dans sa province de *Picardie*. Ce gentilhomme demanda à sa Majesté la permission de suivre *Cartier* ‡ dans ses découvertes ; et il l'obtint. Mais une commission simple était trop peu de chose pour un personnage de sa considération ; de sorte que *François Ier.* par lettres patentes en date du 15 janvier 1540,* l'établit son *vice roi et son lieutenant général en Canada, Labrador et autres lieux circonvoisins. Cartier*, avec le titre de capitaine général et de maître pilote des vaisseaux du Roy, fut chargé de l'armement de cinq navires formant l'expédition projetée. M. de *Roberval* vint à Saint-Malo presser l'armement, mais comme on ne put rassembler assez promptement le matériel nécessaire aux deux vaisseaux qu'il équipait lui-même, il pressa *Cartier* de partir, et ne mit à la voile que l'année suivante, à *La Rochelle*.

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† Les Sauvages leur avaient donné à entendre que le Saguenay renfermait or, rubis, etc., 2d voy. ch. XIX.

‡ Il paraît singulier qu'un *lieutenant de Roy aux pays de Canada, Hochelaga et Saguenay*, ait demandé la permission de suivre son maître pilote, ou capitaine-général.

* Cette date correspond au 25 janvier 1541, par ce que l'on ne commençait l'année qu'à Pâque, et que le calendrier était en arrière de 10 jours.

Troisième Voyage.

Cartier sortit donc de Saint-Malo le 23 mai 1541 et arriva à *Terre-Neuve* avec deux navires seulement. Au bout de deux mois de séjour dans le havre de *Carpont*, il y fut rejoint par les trois autres navires de l'expédition, mais *Roberval* ne parut pas. Enfin après trois mois d'une traversée pénible *Cartier* arriva dans le havre de *Sainte-Croix*. Il reçut alors la visite *d'Agona* que *Donnacona* avait fait nommer roi pendant son absence. Le capitaine lui fit le recit de la mort des naturels passés en France ; *Agona* qui restait de cette manière souverain du pays ne put dissimuler son contentement ; il tira la couronne de cuir garnie *d'ésurguy* et la plaça sur la tête de *Cartier* en lui témoignant beaucoup de joie et de respect. J'ai tout lieu de penser que ce mot *ésurguy* désignait un métal ‖ quelconque puisque nous trouvons dans la relation du second voyage : " *Et sur ce, vint une barque des princi-* " *paux naturels à bord des dicts navires, lesquels firent* " *don à notre capitaine de vingt-quatre colliers d'esurguy,* " *qui est la plus grande richesse qu'ils aient en ce monde,* " *car ils l'estiment mieux qu'or et argent.*" Étant allé visiter un havre et une petit rivière à quatre lieues *plus outre*, aujourd'hui *la rivière rouge* §, et l'ayant trouvée commode, il y conduisit trois de ses navires ; puis il fit bâtir sur la rive une citadelle qu'il nomma *Charlesbourg* ‡ et y arma deux canots dans le dessein de passer par les cataractes, * au *Saguenay*, mais il changea de résolution comme le prouve la chronique suivante : " *Le capitaine général* " *ayant renvoyé les deux navires, ainsi qu'il en avait eu* " *l'ordonnance du Roy et faict commencer la bâtisse d'un* " *fort, prit projet avec le dict viscomte de Beaupré et*

‖ C'était tout simplement une espèce de rassades faite avec certains coquillages, que leur trafiquaient les Andastes et les autres sauvages du sud.

§ La rivière du *Cap Rouge* ce qui est bien différent.

‡ La paroisse actuelle de Charlesbourg ne correspond pas au même lieu.

*L'auteur veut parler probablement du Saut Saint-Louis.

" *maints gentilshommes, tant maistres que pilotes choisis par* " *la délibération d'un chacun à faire voyage avec deux* " *barques pour y voir et comprendre la façon des saults* " *d'eau qu'il y a à passer pour aller au Saguenay, afin de* " *se disposer pour le printemps proche à passer outre. Et* " *adonc arrivés au dict premier sault se rendirent tous au* " *village du second sault ; mais voyant que le tierce sault* " *était plus avant dans les terres et marecages, reprirent la* " *route de Tutonaguy pour par delà retourner à Hoche-* " *laga.*"

Cependant l'on était déjà en mai 1542, et le seigneur de *Roberval*, si impatiemment attendu depuis longtemps, n'arrivait point. Pour surcroit de contrariété, les vivres commençaient à manquer, les naturels devenaient exigeants, les hommes composant les équipages commencèrent à murmurer. § Ils se mutinèrent tout à fait et contraignirent *Cartier* à se rembarquer avec eux pour la France. Le capitaine général, ne pouvant opposer une résistance suffisante aux volontés de ses équipages, céda et fit voile vers l'Europe. A la hauteur de *Terre-Neuve*, dans le hâvre de *Saint Jean*, il retrouva le vice-roy qui lui amenait un grand convoi et qui sollicita vivement *Jacques Cartier* à retourner au *Canada* ; mais notre grand navigateur, s'y étant refusé par différents motifs, préféra continuer sa route vers la France et arriva à Saint-Malo après dix-sept mois d'absence, † au commencement d'octobre 1542. Nous le voyons en effet tenir sur les fonts de baptême la

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§ La relation de Cartier ne mentionne point le mécontentement de ses gens, non plus que la relation du voyage de Roberval. Dans cette dernière, il est dit seulement : " Qu'il n'avait pu avec sa petite bande résister aux sauvages, " qui rôdaient journellement et l'incommodaient fort, et " que c'était là la cause qui le portait à revenir en " France." Voy. de Roberval, ch. I.

† Les comptes présentés par Cartier à la suite de cette expédition disent bien que les vaisseaux ont été à ses frais 17 mois, mais il n'est pas probable que Cartier, parti de Terre-Neuve au mois de juin, aît été jusqu'au mois d'octobre sans toucher les côtes de la Bretagne.

fille du lieutenant gouverneur de notre ville, *le* 21 *du dit mois.* D'autres historiens prétendent que *Jacques Cartier* au contraire fut obligé de retourner au *Canada* avec M. de *Roberval*; voici comment le savant M. *Manet* s'explique à ce sujet : " Dès que M. de *Roberval* eut rétabli le fort " de *Charlesbourg* dans un état satisfaisant de défense, il " y laissa de nouveau *Jacques Cartier*, * avec une certaine " quantité de gens : mais il envoya l'un de ses pilotes, " nommé *Jean Alphonse de Xaintonge*, dans le nord de " Terre-Neuve pour chercher un passage aux Indes. Ce " dernier s'éleva jusqu'au cinquante-deuxième degré de " latitude, et n'alla pas plus loin. On ne dit point combien " de temps il employa dans ce voyage ; mais il y a bien à " conjecturer qu'il ne retrouva plus M. de Roberval en Ca- " nada, puisque ce fut à *Jacques Cartier* qu'il rendit compte " de ses découvertes." † M. de *Roberval* fit à lui seul plusieurs autres expéditions ; la dernière eut lieu en 1549 et ne fut pas heureuse. Il dit dans son registre de bord ‡ que *Jacques Cartier* rapportait plusieurs diamants et de l'or en abondance. Quant à *Jacques Cartier*, depuis ‖ sa dernière expédition qu'on a bien de la peine à préciser d'une manière certaine, il ne reprit plus la mer. §

* Ce fait est contredit positivement par M. de Roberval lui-même. Voyage de Rob. ch. I. Les registres de Saint-Malo prouvent d'ailleurs que Cartier était de retour en Bretagne le 21 d'octobre 1542, puisqu'il y est parrain d'une fille du Sieur de la Péraudière.

† Si le pilote Jean Alphonse rendit compte de ses découvertes à Cartier, ce ne put être que dans un quatrième voyage que celui-ci aurait fait dans l'été de 1543, ou après son retour en Bretagne.

‡ Ceci se rapporte au voyage de 1542-3.

‖ Il faudrait dire depuis la dernière expédition dont nous avons parlé.

§ Quand même on pourrait établir que Cartier a fait acte de présence à Saint-Malo, tous les ans depuis son troisième voyage jusqu'à sa mort, cela ne prouverait pas absolument qu'il ne fit plus de voyage au Canada : le vaisseau qui vint chercher M. de Roberval, et qu'il commandait probablement lui-même, ne fut que huit mois à ce voyage.

L'hiver, il habitait sa ville natale, et l'été, le capitaine se retirait au village de *Limoilou*, où il avait fait bâtir une jolie maison de campagne, désignée encore aujourd'hui sous le nom de *Portes-Cartier*. A son nom de famille, notre navigateur, anobli par *François Ier.* ajouta le titre de *Seigneur de Limoilou*. Le dernier acte de nos registres qui atteste l'existence du noble capitaine, est un titre du chapitre de Saint-Malo, en date du 29 *novembre* 1549, * par lequel " *Jacques Cartier, sieur de Limoilou, présent en nos murs,* " *et Catherine Des-granges, sa femme, fondèrent dans la* " *cathédrale un obit, moyennant une somme de quatre livres,* " *forte monnaie, de rente, sur l'hypothèque de leur maison* " *et jardin situés jouxte l'hôpital de Saint Thomas.*" Depuis cette époque il n'est plus fait mention de lui, de sorte qu'on ne sait où le conquérant finit ses jours. Ce qu'il y a de certain c'est que les registres et les archives de la ville de Saint-Malo ne font nullement mention de sa mort. On ne sait au juste si *Jacques Cartier* laissa des héritiers directs de son nom et de sa renommée. Je ne le crois pas, mais, à défaut d'enfants, il laissa une foule de collatéraux.

On voit dans nos archives municipales, sous la date du 14 Janvier, 1588, des lettres de *Henri* III, en vertu desquelles, pour *reconnaître les services rendus à l'État par Jacques Cartier, leur oncle, sa majesté daigna accorder aux sieurs Etienne Chatton de la Jaunais et Jacques Noël ou Nouël, capitaines de navires et maîtres pilotes de Saint-Malo, le commerce exclusif du Canada pendant douze ans, avec faculté à eux de transporter chaque année dans ce pays, pour l'exploitation des mines découvertes ou à découvrir, soixante criminels tant hommes que femmes, condamnés à mort ou à quelque autre peine corporelle : mais cette faveur ne dura que jusqu'au 5 mai,* 1589, *époque où les Malouins obtinrent du même prince la rétraction de ce privilège.*

La postérité de *Jacques Cartier*, dit *M. Manet*, s'est éteinte parmi nous le 9 *Janvier* 1665, dans la personne de *Hervée Cartier*. Quant aux descendants collatéraux de cette ancienne famille, on en trouve encore aujourd'hui en *Pleur-*

* Cependant, d'aprés M. Cunat, un acte du 15 octobre 1552 atteste encore la présence et l'existence de " Noble homme Jacques Cartier à Saint-Malo."

tuit et en *Saint-Coulomb* (communes de l'arrondissement de Saint-Malo), et *M. Aubault*, en particulier, receveur actuel de nos hospices, originaire de la dernière de ces deux paroisses, peut se glorifier d'être issu d'une *Julienne Cartier*, *mariée en* 1723 *à un Jean Aubault de la Haute Chambre.*

SOURCES ET AUTEURS A CONSULTER:

1o. MANUSCRITS.

Archives de la ville de Saint-Malo.

Journal ou Mémoires de Jacques Cartier écrits par lui-même.

Mémoires des neveux de Jacques Cartier sur les trois expéditions de leur oncle.

Registres de l'Etat Civil de la ville de Saint-Malo.

2o. OUVRAGES IMPRIMÉS.

1o. Prima relatione della navigatione di Jacques Cartier, piloto di Francia, della terra nuova detta la Nuova Francia, trovata del anno 1534 in-fo. Venise 1563.

2o. *Brief récit et succincte narration de la navigation faite ès isles de Canada, Hochelaga et Saguenay et autres et particulièrement des mœurs, langages et cérémonies d'habitans d'icelle. Paris, Ponce Roffet*, 1546, *petit in*-8.

3o. *Discours du voyage de Jacques Cartier aux terres-neuves de Canada, Norimbergue, Hochelaga, Labrador et pays adjacens dictes Nouvelle-France en* 1534. Rouen. Raphael du Petit-Val. 1596. petit in-8.

4o. *Journal de Jacques Cartier.* Collection Italienne de Ramusio, Venise, 1565. in-fo. T. III.

5o. *Journal de Jacques Cartier*, Histoire de la Nouvelle-France, par Marc Lescarbot.

6o. *Troisième voyage de Jacques Cartier*, T. III de la collection Hackluyt, Leyde, 1600, in folio.

7o. *Biographie des Malouins Célèbres*, par M. Manet. Article, *Cartier.* Paris 1824.

8o. Saint-Malo illustré par ses marins, par M. Cunat, Paris 1857.

9o. *Biographie Bretonne* par M. Livot. Vannes, 1858: Article, *Cartier.*

DOCUMENTS RELATIFS A JACQUES CARTIER ET A SA FAMILLE.

5e Envoi de Mr. Desmazières de Séchelles.

SOMMAIRE.

COPIES des textes originaux, fort difficiles à déchiffrer :—

1° De Lettres Patentes délivrées par François Ier. à Jacques Cartier (17 Octobre, 1540).

2° Des Lettres Patentes du Dauphin (Henri II) au célèbre navigateur (20 Octobre, 1540).

3° D'une Ordonnance de François Ier en date à Evreux du 3 avril, 1542, nommant M. Robert Legoupil Lieutenant de l'Amirauté, pour vérifier les comptes et prétentions de Jacques Cartier et du Sieur de Roberval.

4° D'un extrait de la dite Vérification fait par Etienne Gravé, Notaire à Saint Malo, le 26 Novembre, 1587.

5° D'une Lettre Patente d'Henri III, en date du 29 Août 1575, nommant Etienne Chatton de la Jaunaye, neveu de Cartier, Capitaine de navire aux gages de six cents livres par an.

6° Note sur Etienne Chatton, Sieur de la Jaunaye et neveu de Cartier.

Lettres patentes données par François Ier à Jacques Cartier, le 17 Octobre 1540, lui conférant le titre de Capitaine Général et de Maître Pilote des navires qu'il conduit aux terres neuves des pays de Canada, Ochelaga et Saguenay, le droit de prendre le gallion l'*Esmérillon* pour servir de radoub aux autres navires, ainsi que celui de choisir 50 condamnés pour le service de l'expédition.

François par la grâce de Dieu Roy de France, à tous ceux qui ces présentes lettres verront : Salut.

Comme pour le désir d'entendre et avoir connaissance de plusieurs pays, que on dict inhabitez et autres estre possédez par gens sauvages, vivans sans connaissance de Dieu,

et sans usage de raison, nous avons à grands frais et mises, envoyé découvrir les dits pays, par plusieurs bons pilotes et autres nos subjectz de bon entendement, sçavoir et expérience, qui d'iceux pays, nous auraient amené divers hommes, que nous avons par long temps tenus en nostre Royaume, les faisans instruire en l'amour et la crainte de Dieu et de sa sainte loy et doctrine chrestienne, en intention de les faire ramener ès dictz pays, en compagnie de bon nombre de nos subjectz de bonne volonté, afin de plus facilement induire les autres peuples d'iceux pays à croire en notre sainte foy ; et entre autres y eussions envoyé notre cher et bien aimé *Jacques Cartier*, lequel aurait découvert grand pays des terres de *Canada* et *Ochelaga* faisant un bout de l'Asie, du costé de l'occident, lesquels pays, il a trouvez, ainsi qu'il nous a rapporté, garnis de plusieurs bonnes commodités et les peuples d'iceux bien formez de corps et de membres, et bien disposez d'esprit et d'entendement ; desquels peuples, il nous a semblablement amené aucun nombre, que nous avons par longtemps fait vivre et instruire en notre sainte foy avec nos ditz subjets. (*) En considération de quoy, et de leur bonne inclination, nous avons advisé et délibéré *de renvoier le dit Cartier* èsdicts pays de *Canada* et *Ochelaga* et jusqu'en la terre de *Saguenay*, s'il peut y aborder, avec bon nombre de navires et de nos dictz sujets de bonne volonté, et de toutes qualités, arts et industrie, pour plus avant entrer ès dicts pays, converser avec les dits peuples d'iceux, et avec eux habiter, si besoin est, afin de mieux parvenir à notre dicte intention et à faire chose agréable à Dieu nostre Créateur et Rédempteur, et qui soit à l'augmentation de son saint et sacré nom, et de nostre sainte Eglise Catholique, de laquelle nous sommes dict et nommé le premier fils.

Pourquoy, soit besoign, pour meilleur ordre et expédition de la dicte entreprise, députer et establir un *capitaine général* et *maistre pilote* des dicts navires, qui ait regard à la conduite d'iceux, et sur les gens, officiers et soldats y ordonnés et establis. Savoir faisons, que nous sommes

(*) Voir les notes que nous avons déja envoyées à la Société, sur ces sauvages amenés à Saint-Malo par Jacques Cartier et baptisés dans notre église cathédrale.

plein confians de la personne du dict *Jacques Cartier* et de *ses sens, suffisance, loyaulté, preud'homie, hardiesse, grande intelligence* et *bonne expérience.* Sachez pour ces causes et autres à ce nous mouvans : avons fait et constitué, ordonné, et establi, faisons, constituons, ordonnons et établissons par ces présentes, *Capitaine Général et Maistre Pilote de tous les navires et autres vaisseaux de mer*, par nous ordonnés estre menés pour la dicte entreprise et expédition, pour le dit estat et charge de *Capitaine Général et Maistre Pilote d'iceux navires et vaisseaux, avoir, tenir et exercer par le dict Jacques Cartier, aux honneurs, prérogatives, prééminences, franchises, libertés, gaiges et bienfaicts*, tels que par nous luy seront pour ce ordonnés, tant qu'il nous plaira, et luy avons donné et donnons puissance et autorité de mettre, establir et instituer aux dicts navires tels lieutenants, patrons, pilotes et autres ministres nécessaires pour le faict et conduite d'iceux, et en tel nombre qu'il verra et cognoistra estre besoign et nécessaire pour le bien de la dicte expédition.

Si donnons en mandement par ces dites présentes à nostre Admiral ou Vice-Admiral que, pris et reçu du dit *Jacques Cartier* le serment pour ce du et accoutumé, iceluy mettent et instituent ou fassent mettre et instituer, de par nous, en possession et saisine du dit estat de *capitaine général et maistre pilote* et d'iceluy ensemble *des honneurs, prérogatives, prééminences, franchises, libertés, gaiges*, et *bienfaicts* tels que par nous luy seront à ce ordonnez, le fassent, souffrent, et laissent jouir et user pleinement et paisiblement et à lui obéir et entendre de tous, et ainsi qu'il appartiendra ès choses touchant et concernant le dict estat et charge, et outre, luy fasse, souffre et permette prendre le petit gallion appelé : *l'Esmérillon*, que de présent il a de nous, lequel est jà vieil et caduc, pour servir à l'adoub de ceux des navires qui en auront besoing et lequel nous voulons estre pris et appliqué par le dict *Cartier* pour l'effect susdict, sans qu'il soit tenu d'en rendre aucun autre compte ni reliquat, et duquel compte et reliquat nous l'avons deschargé et deschargeons par icelles présentes, par lesquelles nous mandons aussy à notre Prévost de Paris, Baillifs de Rouen, de Caën, d'Orléans, de Bloys, et de Tours, Sennéchaux du Maine, d'Anjou et Guyenne et à tous nos autres Baillifs, *Sennéchaux Prevosts et Alloués et autres nos* justiciers et officiers tant de

nostre dict Royaume, que de notre pays de Bretagne, uny à iceluy, par devers les quels sont aucuns prisonniers accusez ou prévenus d'aucuns crimes, quels qu'ils soient, hors des crimes d'héresie et de léze-majesté divine et humaine envers nous et de faulx monnayeurs, qu'ils aient incontinent à délivrer rendre et bailler ès mains du dict Cartier, ou ses commis et députez portant ces présentes, ou le duplicata d'icelles, pour notre service en la dicte entreprise et expédition, ceux des dicts prisonniers qu'il cognaitra estre propres suffisants et capables pour servir en icelle expédition, jusqu'au nombre de *cinquante personnes*, et, selon le choix que le dict *Cartier* en fera, iceux premièrement jugés et condamnés selon leur démérite et la gravité de leurs méfaits, si jugez et condamnez ne sont, et satisfaction aussi préalablement ordonnée aux parties civiles et intéressées, si fait n'avait été. Pour laquelle toutefois ne voulons la délivrance de leurs personnes ès dictes mains du dit *Cartier*, s'il les trouve de service, estre retardée ni retenue, mais se prendra la dicte satisfaction sur leurs biens seulement et laquelle délivrance des dicts prisonniers accusés ou prévenus, nous voulons estre faicte ès dites mains du dit *Cartier*, pour l'effet dessus dict, par nos dicts justiciers et officiers respectivement, et par chacun d'eux en leur regard, pouvoir et jurisdiction, nonobstant oppositions ou appellations quelconques faictes ou à faire, relevées ou à relever, et sans que, par le moyen d'icelles, icelle délivrance en la manière dessus dicte soit aucunement differée. Et afin que plus grand nombre n'en soit tiré outre les dicts cinquante, nous voulons que la délivrance que chacun de nos dicts officiers en fera au dict *Cartier* soit escripte et certifiée en la marge de ces dites présentes, et que neanmoins registre en soit par eux faict, et envoyé incontinent par devers notre amé et féal Chancelier, pour cognoistre le nombre et la qualité de ceux qui ainsi auront esté baillez et délivrez, *car tel est notre plaisir*.

En témoignage de ce, nous avons fait mettre nostre scel à ces dites présentes.

Donné à Saint-Prix le dix-septième jour d'octobre l'an de grâce mil-cinq-cent-quarante et de nostre règne le vingt-sixième.

Ainsi signé sur le reply.: Par le Roy, Mgr. le Chancellier et autres présents, signé: De la Chesnaie et scellé sur le dict reply à simple queue de cire jaulne.

Auxquelles lettres est attaché sous contre-scel, autres lettres patentes dont la teneur suit:

Lettres patentes délivrées par le Dauphin (Henri II) à Jacques Cartier, au Château de Sainct Prix le 20 octobre 1540, corroborant celles de son père et contenant quelques instructions supplémentaires, relativement à l'extradition des 50 condamnés.

Henry fils ainé du Roy, Dauphin de Viennois, Duc de Bretagne, Comte de Valentinois et de Diois, à nos amez et féaux les gens de nos Conseil et Chancellerie, Sénéchaux, Allouez, Lieutenants, et à tous nos autres Justiciers et Officiers en nos dits pays et Duché: Salut.

Nous vous mandons que suivant le contenu des lettres patentes du Roy nostre très-honoré Seigneur et père, données en ce lieu de Sainct-Prix, le dix-septième jour de ce présent mois, auxquelles ces présentes sont attachées soubz le contre-scel de nostre chancellerie, vous ayez incontinent à délivrer, rendre et bailler entre les mains de nostre cher et bien amé *Jacques Cartier*, *Capitaine Général et Pilote de tous les navires et autres vaisseaux de mer* que le Roy nostre dict Seigneur et père envoya ès pays de *Canada* et *Ochelaga* et jusqu'en la terre du *Saguenay*, pour les causes déclarées ès dictes lettres, ou à ses commis et députez portant les dictes lettres, et ces dictes présentes, les prisonniers estant par devers vous accusez ou prévenus d'aucun crime quelqu'il soit, hors du crime d'hérésie et lèze-majesté divine et humaine et de faulx monnayeur, que le dict Cartier cognoistra estre propres, suffisants et capables pour servir ès dict voïage et entreprise, jusqu'au parfaict du nombre de cinquante personnes et selon le choix que le dit Cartier en fera, iceux premièrement jugez et condamnez selon leurs démérites et la gravité de leurs méfaicts, si jugez et condamnez ne sont, satisfaction aussi préalablement faicte aux parties civiles et intéressées, si faicte n'avait été, sans toutefois pour la dicte satisfaction retarder la délivrance de leurs personnes ès dictes mains du dit Cartier, s'il les trouve de service comme dict est. Mais ordonnons icelle satisfaction

estre prise sur leurs biens seulement, et afin qu'il n'en soit tiré plus grand nombre que cinquante, chacun de vous, respectivement, regarderez la marge des dictes lettres combien il en aura été délivré au dict *Cartier*, et ferez écrire et certifier en icelle marge ceux que luy ferez délivrer et néanmoins en tiendrez registre, que vous enverrez à notre très-cher et féal Chancelier de France et le nostre pour cognoistre le nombre et qualité qui ainsi auront esté délivrez, le tout selon et ainsi qu'il est plus au long contenu et déclaré ès dictes lettres du Roy nostre dict Seigneur et père, et que le dict Seigneur le veult et mande par icelles.

Donné à Sainct-Prix, le vingtième jour d'octobre l'an mil-cinq-cent-quarante (1540).

Ainsi signé par Monseigneur le Dauphin et Duc. Signé : Clausse.

Et scellées à simple queue de cire rouge.

Ordonnance de François Ier, en date à Evreux du 3 Avril 1542, nommant Me. Robert Legoupil lieutenant de l'Admirauté, juge et arbitre des démêlés existant entre l'Admirauté de France, Jacques Cartier et le Sieur de Roberval.

François, par la grâce de Dieu, Roy de France.

A nostre aimé et féal Conseiller et Lieutenant en l'Admirauté de France, à la table de Marbre de notre palais de Rouen, maistre Robert Legoupil : Salut et Dilection.

Comme pour voir et entendre les comptes de la recepte et dépense qui a esté faicte par notre cher et bien aimé Jacques Cartier, notre pilote, au voyage par luy naguères faict par notre commandement ès pays de Canada, et des deniers par luy reçus à cet effet, tant de nous que de feu nostre amé et féal cousin le Seigneur de Chasteaubriand, nous eussions par cy-devant commis et député aucuns commissaires nos officiers estans lez nous, et à la suite de nostre personne, lesquels pour les autres occupations et empeschements qu'ils ont en leurs charges et estats n'y auroient pu vacquer ni entendre ; au moyen de quoi, n'ont pu estre jusqu'icy les dits comptes vérifiés, ni la vérité de la dicte recepte et dépense du dict voïage congnue, ni entendue, au grand intéret et préjudice de nous et du dict *Cartier* ; lequel, à ceste cause, nous a très-humblement

supplié et requis luy vouloir pourvoir d'autres commissaires à l'effet que dessus. Savoir faisons, que nous confiant pleinement en votre expérience, persévérance, de vos sens, intégrité, loyauté et bonne diligence vous avons commis, ordonné et député ; commettons, ordonnons, et députons pour, et au lieu des commissaires dessus dicts, assister avec quatre bons personnages, de savoir, loyauté et expérience au faict de dépense de la Marine, non suspects ni favorables, dont le dit *Cartier* et le sieur de *Roberval* conviendront par devant vous, dedans huictaine, après l'assignation de ce présent renvoy achevé ; et à défaut d'en convenir et d'accorder par eux, en prendre de votre office de non suspects ni favorables à l'une ni à l'autre partie, et avec eux procéder à l'audition et examen des comptes du dicts *Cartier*, appelé et présent le dict sieur de *Roberval*, lequel nous voulons y estre adjourné par le premier nostre huissier ou sergent requis, si besoin est intimation, qu'il y compare ou non, sera procédé par vous et les dicts commissaires à l'exécution de cette présente commission, ouir (entendre) aussi le différent d'entre le dit de *Roberval* et *Cartier* tant sur le fait de la dite recepte et dépense que autres par eux respectivement prétendues, pour après nous donner advis et aux gens de nostre conseil privé, tant sur la closture des dicts comptes et de ce dont le dit *Cartier* par la fin d'iceux nous pourrait estre redevable, que sur le jugement du dict différend d'entre le dit sieur de *Roberval* et *Cartier*, et le tout nous renvoyer féablement clos et scellé ou aux gens de nostre dict conseil, pour après et pourvoir ainsi que verront estre à faire : par raison de ce faire vous avons et aux dicts quatre commissaires qui seront par vous choisis et élus, comme dict est, donné et donnons pouvoir, auctorité, commission et mandement spécial, en déchargeant par ce moyen les quatre commissaires, par nous jà députés pour cet effet, de leur dicte commission par ces dites présentes.

Car tel est notre plaisir.

Donné à Evreux, le troisième jour d'Avril, l'an de grâce mil cinq cent quarante-trois, avant pasques et de notre règne le trentième (3 Avril 1543.)

Ainsi signé : Par le Roy, en son conseil : De Neufville, et scellé du grand scel de cire jaune à simple queue.

EXTRAIT de la vérification des susdits comptes faite par Estienne Gravé, notaire à Saint-Malo, le 26 *Novembre* 1587.

Exposé des comptes, détails, prétentions de Jacques Cartier, demande, remboursement, etc. etc.

Collation faicte par nous Estienne Gravé et Jules Lesieu, notaires Royaux de la cour de Rennes, establis à Saint-Malo et à Chasteau-Neuf respectivement; sur les originaulx, nous apparu par Jacques Odieure, marchand demeurant au dict Saint-Malo, l'un des successeurs du dict feu capitaine Cartier, et outre, nous a le dict Odieure donné un compte escript sur papier signé: *Jacques Cartier*, contenant soixante-dix feuilles d'écriture, le commencement duquel, jusqu'au troisième feuillet verso, avons, seulement avec la déduction estant au dernier feuillet du dict compte, inséré de mot à mot comme en suit, et non, pas d'avantage à raison de la longueur du dict compte:

" Afin que par vous, Monsieur Maistre Robert Legoupil, " Conseiller du Roy notre Sire, et Lieutenant en l'admi- " raulté à la Pierre de marbre de Rouen, Commissaire par " le dict Seigneur, ordonné pour voir et ouir les comptes de " la recepte, mise et despense que *Jacques Cartier Capitaine* " *et Pilote* par autorité royale au voyage dernièrement " faict par luy à la terre de *Canada* et autres lieux, en- " semble ouir et entendre les différends d'entre le sieur de " Roberval et le dict *Cartier*, appelés en votre compagnie " quatre commissaires, selon et au désir de leur commis- " sion, est prest à rendre et offre iceluy *Cartier* faire au " désir d'ycelle commission et selon que le vouloir du dict " Seigneur est, soit entendu pleinement et faict au moyen " des dits comptes. Et premier dict iceluy *Cartier* et se " charge avoir esté ordonné par le dict Seigneur pour l'ex- " écution du dit voïage estre délivré à *Jean François de* " *La Rocque, sieur de Roberval et audict Cartier*, quarante " cinq mille livres tournois pour employer et convertir " aux choses nécessaires pour telles expéditions, plus à " plein mentionnées par transaction verbale, articulées et " spécifiées, faictes de la part du dict Seigneur par Maistre " Guillaume Preud'homme, Monsieur le Général de Nor- " mandie et les dicts de la *Rocque et Cartier* à ceste pré-

" sente attachée. Desquelles quarante cinq mille livres, " quinze mille demeurent entre les mains du dict de La " Rocque, dont il se chargea, comme il appert par actes " signés du dict de La Rocque et Charles de Kermarec, " sieur du dict lieu, et le dict *Cartier*, en date du septième " jour de may, l'an mil cinq cent quarante-un, " faicte à Saint Malo, quels actes ensemble autres " pièces, advenant le deny du dict de la Rocque, il nous " plaira voir et permettre au dit *Cartier*, ses soubstenances " et deffences comme veoirés par raison avoir affaire du " reste de la dicte somme, qui est trente mille livres, " faisant les deux tiers des quarante cinq mille livres, les- " quelles trente mille livres délivrées au dict *Cartier* par les " mains de maistre Jean Duval, monsieur le trésorier de " l'espargne du dict Seigneur, de laquelle somme absolu- " ment se rend le dit *Cartier* comptable, et présentement " offre par parcelles et articles faire apparoir si loyale- " ment a esté à la dispartition d'iceux deniers procedé par " luy, protestant iceluy *Cartier* de revue et estre ouy, au pré- " alable répondre à ce que se trouveroit ambigu et doub- " teux à trouver, et promet, après la vive voix, par actes " enseignements et instruments authentiques, suppliant et " requérant quant à ce, iceux est revus, entendus et reçus, " selon que droict et raison supposent le faict pour le " dict Cartier, mesme es choses qui autrement ne peuvent " estre entendues, desquels le dit Cartier se charge en " prouve, recognoissance et probation si requise se trouve " de plus ample ; plus se charge, le dict Cartier avoir reçu " du dit sieur de Roberval la somme de treize cent cin- " quante livres tournois en six cents escus soleil, que le dict " sieur de Roberval prit par emprunt de François Cros- " nier, bourgeois de Saint-Malo, lesquels furent employés " en partie aux payements et mises du dict Cartier, et de " laquelle somme le dict sieur de Roberval a depuis baillé " respondant au dict Crosnier, Allouise Detiville, sieur de " Sainct-Martin, et par ainsi, demeure le dit Cartier comp- " table de trente un mil trois cent cinquante livres.

" Laquelle charge congnue reste ouyr et entendre au cal- " cul de sa descharge, et icelle congnue l'équipoler à la dicte " charge, et voir qui succombera ; mais avant de passer " outre, reste sçavoir et pleinement prévoir l'intention du " Roy, que à l'expédition du dict voïage doibvent par les

" dicts Roberval et Cartier estre fournis cinq navires, tant
" en chept pur de partie, que en nauléaige pour les autres,
" tous portant quatre cents tonneaux de charge, pour les-
" quels en général est ordonné huit mille cinq cent livres
" pour le tout des dicts navires, pour l'accomplissement du
" dict voyage, comme il est à plein contenu en la dicte
" transaction verbale, convenue par le dict Seigneur par
" Maistre Guillaume Preud'homme et encore réiteré et
" spécifié par l'acquit du dict Duval ehors qu'il livra les
" dicts trente mille livres au dict Cartier, a faict et employé
" pour l'exécution de tout le dict voïage et ce, par l'exprès
" commandement qu'il apparoistra à suffire du dict sieur de
" Roberval, lieutenant pour le Roy au dict voïage ; dict,
" maintient et affirme le dict Cartier avoir employé
" loyalement et mieux que pour son propre affaire, huict
" mille cinq cents livres au payement et réparation, en pur
" achapt de partie des dicts navires et en la solde de fret
" et nauléaige pour les autres. Lesquels cinq navires, il
" a fournis et payés, luy seul, sur la dicte somme de trente
" un mille trois cent cinquante livres qu'il avait, portant de
" charge plus de cinquante tonneaux, outre le contenu en
" la dicte transaction verbale et ce que commandé estoit
" par le dict Seigneur pour l'exécution du dict voyage,
" quant ès dicts navires, le tout par le commandement du
" dict de Roberval comme apparoistra par lettres expresses
" et mandements de luy. A raison de quoy, supplie le
" dict Cartier la dicte somme de huit mille cinq
" cents livres lui estre adjugée, en déduction et rabais de
" la dicte somme de trente mille livres et dont il est chargé,
" attendu le devoir qu'il a faict, mesme que défaillant le
" dict argent du Roy, qu'il avoit admis son propre (argent)
" au hazard et à grosses adventures pour le service du dict
" Seigneur comme il vous apparoistra quand viendra au
" point du tiers navire, lequel ne put être payé selon que
" l'intention du dict Seigneur y estoit, mais pour le défaut
" de l'argent que le dict de Roberval avoit et debvoit
" rapporter de jour en jour pour faire ce que resteroit
" pour iceluy voïage, fut par iceluy Cartier contrainct
" de mener à ses grosses adventures à mesme droict de
" nauléaige les autres deux, comme il est à plein contenu
" au dict article, que le dict Cartier met à option et choix
" de vous, Messieurs, estans pour le dict Seigneur à ce

" présent compte de luy déducer * la dicte somme à lui
" adjugée par la dicte transaction verbale pour les dicts
" cinq navires, qu'est huict mil cinq cents livres, à ce que
" adjoint, ce que le dict Cartier a fraié pour l'Esmérillon,
" et réparation d'iceluy qui estoit au Roy. De la répa-
" ration duquel vous apparoistra par enqueste, sur ce faicte
" par gens à ce credibles qui se monte à la somme de
" mille livres, de quoy offre le dict Cartier faire ample
" approbation et se charge quant à ce, de preuve suffisante,
" ou bien prendre que la charge des dicts deux navires
" l'Ermine et l'Emérillon à quatre mil cinq cent livres ; et
" en ce qui est du tiers navire, mettre pour dix-sept mois
" qu'il a esté au dict voïage du dict Cartier et pour huict
" mois qu'il a esté à retourner quérir le dict Roberval au
" dit Canada au péril de nauléaige que les autres deux :
" ce seront deux mil cinq cents livres ; et pour les autres
" deux qui furent au dict voïage, six mois, à cent livres le
" mois sont : douze cent livres. Par ainsi, à ceste fin
" seront : huict mille deux cents livres, le dit tiers navire
" demeurant acquis et propre au dict Cartier en le retenant
" au Roy, retour faict à son taux avec la réparation du
" dict Emérillon se trouvera employé par le dict Cartier
" huict mil sept cents livres, que le dict Cartier supplie luy
" estre mis en déduction de la charge dont est comptable ;
" qui est de trente un mil trois cent cinquante livres, et
" par ainsi déduisant huit mil sept cents livres ne restera
" que vingt deux mil six cent cinquante livres, dont est
" comptable le dict Cartier et ce y deducé et mis à valoir."

" Ce présent compte a esté par nous Robert Legoupil,
" escuyer licencié ès loix, Lieutenant Général, en la juri-
" diction de l'Admiraulté à la Table de Marbre au Palais
" à Rouen de hault et puissant Seigneur, Monseigneur
" l'Admiral de France et Commissaire du Roy en cette
" partie, en la présence de Maistre *Robert Lelarge*, *Pierre*
" *Caradas*, advocat et Procureur du Roy, *Jean Loue*,
" Greffier de mon dict Seigneur l'admiral, *Thomas*
" *Saldaigne*, *Alvara de Latour*, *François Maillard*, et
" *Jean Nourry* par nous appelés, suyvant la commission à
" nous adressée et envoyée par le Roy ; veu, ouy et procédé
" à l'examen, audition, gect et calcul d'iceluy, jouxte les

* Déduire

" codes apposés et escripts en la marge de ce dict compte " et procès verbal par nous de ce faict et signé, et des " susdits officiers et commissaires, appert, selon l'opinion " et advis des dicts commissaires, par le gect et calcul " qu'ils en ont faict, le dict *Cartier* auroit employé et " fraié tant pour les navires, victuailles, souldes, marchan- " dises, loyers, advances et autres frais par le dict *Cartier* " jusqu'à la reddition de ce dict compte pour le faict et " expédition du dict voïage, la somme de trente neuf mille " neuf cent quatre vingt huict livres, quatre sols, six " deniers tournois. Le dit *Cartier* se charge avoir reçu du " Roy, nostre sire, pour l'expédition et entremise du dict " voïage la somme de trente mille livres tournois par les " mains de maistre Jean Duval, trésorier de l'espargne."

" Plus se charge avoir receu par les mains du dict de la " Rocque sieur de Roberval six cents escus soleil, vaillants " treize cens livres."

" Ainsi appert que, en allouant les dicts frais et mises, " seroit deub au dict Cartier de reste de son dict compte " pour l'entremise du dit voïage pour avoir plus mis et " promis payer que receu, la somme de huict mille six cent " trente huict livres quatre sols six deniers tournois aux " réservations et conditions contenues ès dicts codes et " procès verbal. En tesmoign de ce, nous Lieutenant, " Officiers et Commissaires sus nommés avons signé ce " présent et faict sceller sur un lacet passé le travers de ce " dict compte contenant soixante dix feuillets, du grand " sceau de la dicte admirauté, le vingt-uniesme jour de " Juin, l'an de grâce mil cinq cent quarante quatre (21 " Juin 1544).

" Ainsi signé: R. Legoupil, R. Lelarge, P. Caradas, " Thomas Desaldaigne, Alvaro de la Tour, F. Maillard, " Jean Noury, T. Loue, et scellé du sceau de cire rouge " pendant à lacs de soye traversant le dict compte."

Laquelle insertion cy-dessus de commencement du dict compte, et déduction d'iceluy, nous dicts Notaires avons aussi fidèlement collationné sur l'original, et contiennent les transumps des lettres et insertions y dessus quatorze feuillets d'escripture, sans comprendre cestuy prochain subséquent où nous apposerons nos signes et sont les dicts quatorze feuillets escrits de Sébastien Odieure frère du

dict Jacques. Et sont les originaux des dictes lettres et comptes demeurés au dit Jacques Odieure et de son consentement le présent transumpt delivré au Capitaine Jacques Noël du dict Saint Malo, aussy l'un des successeurs du dict feu Cartier, ce requérant pour servir à luy et au dict Jacques Odieure et leurs consors ainsi que de raison. Faict au dict Saint-Malo chez le dict Estienne Gravé, le vingt sixième jour de novembre, an mil cinq cent quatre vingt sept avant midy. Et ont les dicts Jacques Odieure et Jacques Noël signé, tesmoing le sceau royal cy apposé ainsi signé : Jacques Noël, Jacques Odieure, E. Gravé notaire royal, Jn. Lesieu notaire royal et scellé.

Lettre patente d'Henri III en date de Paris du 29 Août 1575, nommant Etienne Chaton, Sieur de la Jaunaye, neveu de Cartier, Capitaine de navires aux gages de six cents livres par an.

Henry, par la grâce de Dieu, Roy de France et de Pologne, à tous ceux qui ces présentes lettres verront, Salut. Sçavoir faisons que nous, ayant égard et considération, aux bons et agréables services que notre cher et bien aimé *Etienne Chaton, sieur de la Jaunaye de Sainct-Malo en Bretaigne* a faicts sur la mer, depuis huict ans en ça, au feu Roy Charles, dernier décédé, notre très-cher Seigneur, et frère, mesme pendant le siége de la Rochelle, reprise de Belle Isle, que depuis à l'armement de six navires qui furent admis et mis en mer, au mois de mars dernier passé, par notre commandement et au dict Sainct-Malo, pour aller contre les Rochelois et autres ennemis de cette couronne, dans l'un desquels le dict de la Jaunaye commandait, lesquels firent prise de deux navires, en l'un desquels estoit Jean Abraham, secrétaire de notre cousin le Prince de Condé, chargé de plusieurs mémoires grandement préjudiciables au bien de nos affaires et au repos de nos subjects. Pour ces causes, et pour l'espérance que nous avons, qu'il continuera de bien en mieux à notre service, selon que les occasions s'en présenteront, à plein confiants,

aussy, de sa fidélité, prudhommie, vaillance, expérience au faict de la Marine et diligence, avons le dict de la *Jaunaye* retenu et retenons par ces présentes en l'estat de *Capitaine de nostre marine* pour, par luy le dict estat avoir, tenir et doresnavent exerçer et en jouir et user aux honneurs, autorité, prérogatives, prééminences, franchises, libertés, droits, profits, revenus et émolument, qui y appartiennent et aux gaiges de six cents livres tournois par an tant qu'il nous plaira. Si donnons en mandement par ces mêmes présentes, à nostre cher et amé cousin le marquis de Villars, Admiral de France, ou à son lieutenant en l'admirauté que, du dict sieur de la Jaunaye pris et reçu le serment, en tel cas requis et accoustumé, iceluy mettent et instituent ou fassent mettre et instituer de par nous en possession et saisine du dict état et d'iceluy, ensemble des honneurs, autorité, prérogative, prééminences, franchises, libertés, gaiges de six cents livres par chacun an, droits, profits, revenus, et esmoluments de susdicts, le faire, souffrir et laisser jouir et user pleinement et paisiblement, et à luy obéir et entendre de tous ceux ainsi qu'il appartiendra, ès choses touchant et concernant le dict estat et charge.

Mandons en outre aux trésoriers de nostre Marine, et chacun d'eux en l'année de leur exercice, que au dict de la Jaunaye, ils payent, baillent et délivrent les dicts gaiges de six cents livres doresnavant par chacun an, selon et en suyvant les états qui leur en seront par nous faicts et qu'il est accoutumé en semblable.

Car tel est nostre plaisir.

En tesmoing de quoy, nous avons faict mettre notre scel à ces dictes présentes. Donné à Paris le vingt neufvième jour d'Aoust l'an de grâce mil cinq cent soixante et quinze et de notre règne le deuxième : signé sur le reply : Par le Roy : Brulart ; et scellé sur double queue de cire jaulne. Ainsi signé, collationné à l'original par moy notaire et secrétaire du Roy. Signé : Gourdon.

Note sur le dit Etienne Chaton, Sieur de la Jaunaye.

Au mois d'avril 1575, trois habitants de Saint-Malo : MM. Bertrand Lefer, Jean Le Breton et *Etienne Chaton*

sieur de la Jaunaye sortirent de la rade de notre ville, avec six navires ; ils étaient tous bien décidés à tirer une vengeance éclatante de la déloyauté des habitants de La Rochelle, qui s'étaient emparés de quelques-uns de nos vaisseaux contre la foi des traités.

Cette petite flotte se dirigea directement vers La Rochelle etant arrivée à portée elle se mit en devoir d'attaquer tous les bâtiments qui étaient à l'ancre ; mais ayant été abordés de trop loin, dit un vieil auteur, *au son des tambours et banderoles déployées*, ces bâtiments eurent le temps d'aller s'échouer sur les vases, de façon, que nos gens ne remportèrent d'autre avantage de cette boutade, que d'emmener avec eux deux barques longues, qui n'avaient pas été aussi diligentes que les autres à effectuer leur retraite.

Après cet insuccès, l'escadrille Malouine se porta sur les côtes d'Espagne, que les rebelles infestaient déjà. Là une de nos frégates ne tarda pas à joindre un navire espagnol dévoué aux Rochellois et à leur parti, et le somma de se rendre. Celui ci en signe d'obéissance baissa aussitôt ses voiles, mais en même temps il jeta ses dépêches à la mer. Nos concitoyens ayant aperçu en cet instant une boîte de fer blanc qui surnageait, envoyèrent un esquif la prendre. On l'ouvrit, et l'on y trouva plusieurs lettres et mémoires, "grandement préjudiciables au bien des affaires" " du Roy et au repos de ses subjetz." Les porteurs de ces pièces étaient un nommé Jean Abraham secrétaire du prince de Condé et un nommé Moissonnière. Ces deux individus furent amenés à Saint-Malo où ils furent quelque temps détenus, et d'où on les transféra ensuite à Paris, pour leur trancher la tête. Cet important service rendu à l'Etat valut au sieur Chaton de la Jaunaye, des lettres d'Henri III des plus flatteuses (voyez ci dessus), par lesquelles il le nomme : " *l'un des capitaines de sa marine, aux* " *gages de* 600 *livres par chacun an.*"

(Manet. Notes inédites sur Saint-Malo.)

NOTE.—A une demi-lieue environ de Paramé, sur la route de Saint-Vincent, l'œil exercé de l'archéologue retrouve encore les derniers vestiges du vaste domaine de Limoilou, donné à Jacques Cartier par le roi François Ier, avec des lettres de noblesse et le titre de Sieur ou Seigneur. Ce domaine se compose de plusieurs fermes bien des fois reconstruites, il est vrai, depuis 1545, et n'offrant par là

même aucun sujet d'études architecturales. Mais, en avançant vers le nord, la route de Saint-Vincent fait un détour et vous conduit devant une maison d'assez belle apparence, dont nous vous envoyons aujourd'hui le dessin. Ce manoir placé sur un plateau élevé, d'où la vue s'étend au loin sur les campagnes environnantes, était la demeure particulière de Jacques Cartier, en sa terre de Limoilou ; pour s'en convaincre, on n'a qu'à regarder l'écusson placé à droite de la porte d'entrée. Ce pied-à-terre que le temps a respecté, comme par mégarde, conserve encore de nos jours le nom de: *Portes-Cartier* ; le mot *porte* dans le vieux langage malouin voulant dire, *maison de campagne.*

Nous aurons l'honneur de mettre sous les yeux de la Société Historique et Littéraire de Québec dans notre prochain envoi, le plan intérieur des Portes-Cartier et de lui faire part de notre moisson archéologique, qui a été fort abondante à notre première visite au manoir du célèbre navigateur. Une fenêtre de la chambre du Sieur de Limoilou a particulièrement attiré notre attention ; nous en avons proposé un bon prix au propriétaire M. Letarouilly, notaire à Fougères, et, si nous réussissons dans notre négociation, nous nous empresserons d'en faire dessiner les vitraux fort curieux, et de vous en envoyer les épreuves. Ces vitraux, autant que nous avons pu rapidement en juger, représentent des sujets allégoriques, et trois saints : St. Bertrand, St. Julien et St. Thomas.

C. Desmazieres de Sechelles,

De la Société générale des gens de lettres de Paris, Membre de plusieurs Sociétés savantes, Rédacteur de l'Union des deux villes.

St. Malo, 1er Mars 1861.
Hotel Dupuy Fromy, rue de Chartres, No. 11.

APPENDICE

À LA

GENÉALOGIE DE JACQUES CARTIER,

PAR

M. C. DESMAZIÈRES DE SÉCHELLES.

ENVOI DU 1ER MAI 1861.

SOMMAIRE.

Acte de Naissance du Père de Jacques Cartier—de son Oncle—de sa Tante—Acte de naissance de Jacques Cartier—des neveux et des nièces dont il fut le parrain—Acte de mariage de Jacques Cartier—Notes et commentaires.

NOTE.—C'est avec un vif regret, que je me vois privé du plaisir de mettre sous les yeux de l'honorable Société Historique et Littéraire de Québec, tous les documents qui m'ont servi à dresser la généalogie de Jacques Cartier, que j'ai eu l'honneur de lui faire parvenir dans mon dernier envoi du mois de Mars. Mais comme tous ces nombreux documents appartiennent, soit à la Municipalité de Saint-Malo, soit à divers particuliers qui y attachent le plus grand prix, je me suis borné à prendre copie des actes les

plus intéressants de la vie intime de mon illustre compatriote, et à les accompagner de quelques explications pour en faciliter l'intelligence, étant largement compensé de mes peines par l'intérêt avec lequel l'honorable Société accueille mes faibles travaux.

C. DESMAZIÈRES DE SÉCHELLES,

St. Malo, 1er Mai 1861.
Hotel Dupuy Fromy, rue de Chartres No. 11.

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4 *Décembre* 1458.

" Die quartâ mensis decembris baptizatus
" extitit *Cartier* quem levârunt de sacro fonte
" Stephanus Baudoin compater principalis et
" Petrus Vivien et Catharina Frete minores,
" (compatrones et commatrones).

YUGUES GUERRIER fecit.

NOTE EXPLICATIVE.

Nous croyons avec quelque raison que cet acte de naissance n'est autre que celui du père de Jacques Cartier. Mais il est si mal fait et si incomplet (comme tous ceux de cette époque), que nous n'osons pas affirmer d'une manière certaine notre proposition. Il n'indique, en effet, ni le *nom propre* donné à l'enfant, ni celui du père, ni celui de la mère. Mais il est une science qui ne fait jamais défaut à l'historien, lorsque toutes les autres viennent à lui manquer dans ses recherches. Cette science c'est celle des dates, et l'on doit toujours y avoir recours en pareil cas. Or, d'après un acte conservé aux archives de la Municipalité de Saint-Malo, il appert: " *qu'un certain Jean Cartier* " *épousa en* 1428 *Guillemette Baudoin, de laquelle il eut* " *cinq enfants, dont l'aîné: Jacobus, Jacques ou Jamet,* " *naquit le* 4 *décembre* 1458 *et fut père de l'illustre navi-* " *gateur.*"

(Voir pour mieux comprendre la généalogie envoyée au mois de Mars dernier).

26 *Février* 1465.

" Die vigesimâ sextâ Februarii, anno quo
" suprà, baptizatus fuit Johannes Cartier filius
" Johannis Cartier et Guillemette Baudoin ejus
" uxoris, quem levaverunt de sacro fonte
" Johannes Vivien principalis compater, et
" JACOBUS CARTIER et Johanna Vivien, filia
" prædicti Vivien, minores."

P. G. GOUPIL fecit.

NOTE EXPLICATIVE.

Nous marchons rapidement de découvertes en découvertes. Dans la note précédente, nous venons de voir en *l'an de grâce* 1428 *un Jean Cartier, épouser une Guillemette Baudoin, en avoir cinq enfants, dont l'aîné est né en* 1458, *le* 4 *décembre.* Voici maintenant l'acte de naissance du second fils. Cet acte est un peu mieux fait que le précédent ; il nous indique au moins, (comme nous le savions déjà au reste par l'acte de la Municipalité de Saint-Malo), *le nom du père et celui de la mère.* Mais il ajoute celui du fils *Jean*, et nous indique même le nom du parrain, qui n'est autre que le *frère aîné Jacques* (*Jacobus*), *père du célèbre navigateur.* Ce *Jacobus Cartier*, parrain de son frère Jean n'avait alors que 7 *ans*, étant né en 1458, et le jeune enfant venant au monde le 26 février 1465.

2 *Juillet*, 1473.

- - - - - - - - - - - - - - - - - -
- - - - " Baptizata fuit *Thomassia Car-*
" *tier* filia *Johannis Cartier* et *Guillemette Bau-*
" *doin ejus uxoris*, quam levârunt de sacro fonte
" Thomassia Joliff principalis commater, et
" Guillemus Pourmerel et Guillemeta Vivien
" minores."

P. G. GOUPIL fecit.

NOTE EXPLICATIVE.

Nous avons dit que Jacques Cartier et Guillemette

Baudoin, mariés en 1428, avaient eu 5 enfants.

Ces cinq enfants furent :

1°. *Jacobus, Jacques ou Jamet Cartier* père de *Jacques Cartier*.

2°. *Johannes* (Jean), né comme nous venons de le voir, le 26 février 1465.

3°. *Stephanus* (Etienne)

4°. *Petrus* (Pierre)

5°. *Thomassia* (Thomasse), dont vous voyez ci-dessus l'acte de naissance, et qui était par conséquent tante de l'illustre navigateur.

(Recours à la Généalogie.)

Acte de naissance de *Jacques Cartier*, découvreur du *Canada*, navigateur à jamais célèbre.

Saint-Malo, 31 *Décembre* 1494.

Le XXXI jour de Décembre fut baptisé *un fils à Jamet Quartier et Geseline Jansart*, sa femme, et fut nommé par Guillaume Maingart principal compére, et petit compère Raoullet (Raoul) Perdriel.

NOTE EXPLICATIVE.

C'est ici surtout, qu'il faut déplorer la manière dont étaient tenus à cette époque les registres des actes de baptême, et surtout la manière dont ces actes étaient rédigés. Longtemps, la naissance de Jacques Cartier n'a pu être précisée d'une maniére exacte ; ce n'est que depuis une cinquantaine d'années environ, que les plus minutieuses recherches ont eu pour résultat de produire l'acte que je mentionne ici, et dont la date s'harmonise exactement avec celle des principaux événements de la vie du grand navigateur. Cet acte de naissance ne nous dit même pas *le nom de l'enfant*; il faut que nous ayons recours à une conclusion subsidiaire pour le trouver. Or, sachant qu'autrefois c'était

l'usage, je dirai plus, une sorte de coutume à laquelle personne ne dérogeait, de donner au fils le nom du père, je conclus naturellement, que l'enfant sus-mentionné se nommait *Jacques*, était fils de *Jamet* (Jacques, Jacobus) *Quartier* ou *Cartier* et de *Geseline Jansart mariés à Saint-Malo, le* 4 *décembre* 1458.

Plus je revois les dates, et plus je suis convaincu que cet acte de naissance est bien celui du découvreur du Canada.

Voyez : *le* 4 *décembre* 1458, *Jamet Cartier épouse Geseline Jansart. Il en eut trois enfants :*

1° *Jehanne Cartier*, née à Saint-Malo en 14...bien plus âgée que son frère, puisque mariée à *Jean Noüel ou Noël*, elle en a un fils (*Pierre*), qui vient au monde *le* 13 *avril* 1506.

2° *Jacques Cartier, né à Saint-Malo le* 31 *décembre* 1494.

3° *Bertheline Cartier, née à Saint-Malo le* 13 *octobre* 1500.

Cet acte de naissance concorde en outre exactement, comme nous venons de le dire, avec toutes les dates des principaux évenements de la vie du grand navigateur. Ainsi :

31 *décembre* 1494, naissance de Jacques Cartier—13 *septembre* 1518, est parrain de sa petite cousine Perrine Cartier, fille de Jean Cartier et de Julienne Lemouenne—2 *mai* 1519, épouse Catherine Des Granges, fille du Connétable de Saint-Malo—20 *avril* 1534, date de la première expédition maritime—5 *septembre* 1534, retour à Saint-Malo—30 *octobre* 1534, commission donnée à Cartier au nom de François Ier par Philippe de Chabot, grand amiral—19 *mai* 1535, depart de la seconde expédition—16 *juillet* 1536, retour à Saint-Malo—25 *mars* 1538, Cartier fait baptiser dans la cathédrale de Saint-Malo trois sauvages qu'il avait ramenés de ses voyages—23 *mai* 1540, date de la 3e. expédition—7 *octobre* 1540, nouvelle commission donnée à Cartier pour autoriser l'expédition déjà entreprise —20 *décembre* 1548, est parrain de Jacques Odieupre.... 1549, reçoit des lettres de noblesse et le titre de sieur ou seigneur de Limoilou—5 *février* 1550, est parrain de Jacques Noël ou Nouël.

2 *May*, 1519.

- - - - - - - - - - - - - - - - - -
- - - - " Reçurent la bénédiction nuptiale
" *Jacques Cartier*, maistre pillote ès port de
" Sainct-Malo, fils de Jamet Cartier et de
" Geseline Jansart, et Marie Katerine Des
" Granches fille de Messire Honoré Des Granches,
" chevalier du Roy nostre Sire et connestable de
" la ville et cyté de Sainct-Malo et de. - - -
"
" - - - - - - - - - - - - - - - - - -
" - - - - - - - - - - - - - - - - - -

NOTE EXPLICATIVE.

Il fallait que les mérites du jeune *maistre pillote* fussent incontestables, pour que *Messire Honoré des Granges connétable de la ville de Saint Malo*, donnât sa fille (*Katerine*) à notre héros, alors âgé de vingt-cinq ans. La réputation de *Jacques Cartier* était donc déja établie, même avant ses glorieuses expéditions, son mariage brillant en est la meilleure preuve, car la charge de connétable était la première de la ville. Hélas ! pourquoi cette union contractée sous de si heureux auspices ne fut-elle pas prospère ? pourquoi l'illustre navigateur ne put-il léguer sa gloire et son nom à jamais célèbre, à aucun héritier direct ?..... (Voir la dernière note). Cet acte de mariage, dont je dois la communication au secrétaire de la mairie de Saint-Malo, m'était complètement inconnu jusqu'à ce jour, et me force à rectifier une petite erreur de date, commise involontairement dans la généalogie que j'ai eu l'honneur de vous soumettre. M'appuyant sur plusieurs documents et sur différents registres de la mairie, qui indiquaient *l'année* 1527 comme étant celle du *mariage de Jacques Cartier*, je ne fis aucune difficulté d'ajouter foi à cette date ; mais l'acte que je produis aujourd'hui, étant daté du 2 *mai* 1519, m'oblige à faire remonter à huit ans plus tôt la célébration du mariage de notre héros. C'est donc *le 2 mai* 1519, *que Jacques Cartier a épousé Katherine Des Granges, et non en* 1527, comme je l'ai malencontreusement écrit dans ma dernière généalogie.

15 *Avril*, 1506.

- - - " fust baptizé un fils à Jean *Noucl* et
" Jehanne *Cartier* sa femme, nommé fust Pierre
" par Pierre Hancelin. Petit compère :
" Anthoine Pièdres, et commère Guillemette
" Boquet. Baptizé par Dom. Estienne Rouxel."
J. CROSNIER fecit.

NOTE EXPLICATIVE.

Cet acte de naissance, qui n'est autre que celui de *Pierre Noüel* ou *Noël*, neveu du célèbre navigateur, est la première preuve d'affinité que l'on puisse trouver, entre la famille *Noël* et la famille *Cartier*, contractée en 14.. par le mariage de *Jean Noüel* et de *Jehanne Cartier*, sœur aînée de notre héros. (Voir la généalogie).

13 *Septembre*, 1518.

" Le treiziesme jour dudict moys de septembre
" fut baptizée Perrine Cartier, fille de Jehan
" Cartier et de Julienne Lemouenne sa femme,
" par Maistre Lancelot Buffier Vicaire. Et
" fut compère *Jacques Cartier* et grande
" commère Bertranne Lejuiff, et petite commère
" Gesseline Porçon.

NOTE EXPLICATIVE.

Et fut compère, dit l'acte: *Jacques Cartier*. C'est du célèbre navigateur dont il est ici question. Il avait alors *vingt-quatre ans* (1518), et, quoique ayant déja navigué, n'avait point encore entrepris les glorieuses expéditions qui devaient un jour éterniser son nom et sa mémoire. C'était un grand honneur chez nos pères de tenir un enfant sur les fonts du baptême, et nous pouvons juger, par le nombre de nièces, de neveux et de cousins que nomma *Cartier*, du rang et de l'importance qu'il avait alors dans sa propre famille.

'cembre 1548.

jour du dict moys de
· ung filz à Michel
alobert, *dont fut grand*
.acques Cartier et Antoine
it compère. Et commère·
.ict-Cire, et fut nommé Jac-
rable et discrète personne
ot Buffier Vicaire Curé.
O. REHAULT fecit.

)TE EXPLICATIVE.

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marché. Il n'est plus ce jeune matelot de
ins, qui profitait joyeusement du temps où il
pour nommer ses neveux et ses nièces ; c'est
: un intrépide et infatigable navigateur que ce
Jacques Cartier. Si ses cheveux ont blanchi, si
nt s'est ridé, ce héros de cinquante-quatre ans n'en
moins conservé une pureté de sentiments, un
nousiasme primitif pour le bien, un saint culte de la
.mille de la patrie, qualités morales qui constituent pour
.'homme la véritable jeunesse, celle du cœur, indépendante
de la fortune et des années, et celle qui fut toujours fidèle
à *Jacques Cartier*. Après avoir bravé pendant de longues
années tous les dangers dont peut à bon droit s'effrayer
l'humanité, après s'être frayé à travers mille obstacles un
chemin sur les mers, pour soumettre à son prince un monde
inconnu, *Cartier*, comme un simple pilote, revient avec joie
se reposer au foyer de ses pères, embellir sa petite terre de
Limoilou près de Saint-Malo, et, comme autrefois, donner
son nom aux frères de ses neveux et de ses nièces. La
gloire, allez-vous dire, lui a donc été inconnue ?—Patience.
C'est sur le bord de la tombe que la déesse l'attend.

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5 *Février*, 1550.

" Le jeudy, cinquiesme jour de feubvrier, fut
" baptizé ung filz en l'église cathédrale de Saint-
" Malo, à Jacques Nouel et à Robine Hervé sa

" femme, par Dom Ollivier Lemarque substitut
" de vénérable et discrète personne Maistre
" Lancelot Buffier chanoine et vicaire-curé de
" la dicte église, et nommé fust par *noble homme*
" *Jacques Cartier*, Jacques, et petit compère
" Jehan Guéridien, pour commère Perrine
" Gaulthier. En présence de Etienne Nouel,
" Mery Rouxel et du soubsigné notaire, le dict
" jour et an. Signé: JACQUES CARTIER et F.
" TREHOUART.

NOTE EXPLICATIVE.

Cet acte a échappé jusqu'ici à tous les auteurs qui ont écrit sur *Jacques Cartier*. Il est, selon nous, de la plus grande importance, parce qu'il nous permet de préciser à peu près l'époque à laquelle le célèbre navigateur *reçut ses lettres de noblesse, avec le titre de sieur ou de seigneur de Limoilou*. Tout me porte à croire que ce fut en 1549. Et voici les raisons sur lesquelles j'appuie mon opinion.

C'est qu'avant cette année (1549), jamais on ne voit le nom de *Jacques Cartier* accompagné d'un titre autre que celui de *capitaine*. Ainsi l'acte précédent, daté du 20 *Décembre* 1548, ne porte que ces mots: *dont fut grand compère le capitaine Jacques Cartier*, sans faire mention d'aucun autre titre.

Mais, dès le 29 *novembre* 1549, un titre du chapitre de Saint-Malo s'exprime ainsi: *Jacques Cartier sieur de Limoilou, présent en nos murs, etc.* Cette phrase: *présent en nos murs*, prouve qu'à cette époque déjà, *Jacques Cartier* n'habitait plus régulièrement Saint-Malo, que sa résidence habituelle était *sa terre de Limoilou*, et qu'il ne venait avec sa femme *Catherine Desgranges* que rarement en ville, bien qu'il y possedât *une maison et un jardin situés près de l'hopital Saint-Thomas*.

L'acte de naissance ci-dessus vient encore corroborer mon opinion. Il porte la date du 5 *février* 1550, et ne laisse aucun doute sur la qualité de notre héros: *noble homme Jacques Cartier*--dit-il. Ce fut donc bien certainement en 1549 que *Jacques Cartier* fut anobli.

DERNIÈRE NOTE.

En terminant notre petit travail, bien incomplet sans doute, mais sur lequel nous reviendrons dans quelque temps, nous nous sommes posé les deux questions suivantes : *Jacques Cartier a-t-il eu des enfants?* Puis: *Quelle fut l'année de sa mort?*

Examinons d'abord la première de ces questions.

Le digne et savant Abbé Manet, dans sa Biographie des Malouins célèbres, s'exprime ainsi à ce sujet: *Le plus* " *ancien officier de marque que nous citerons, depuis la fin* " *du quinzième siècle,* dit-il, *est le fameux Jacques Cartier,* " *ce hardi navigateur dont la postérité s'est éteinte parmi* " *nous le 9 janvier* 1665, *dans la personne d'Hervée Cartier,* " *mais dont la gloire ne s'éteindra jamais.*" (1)

Or, de tous les auteurs qui ont écrit sur le célèbre navigateur, Mr. Manet est le seul qui parle *de la postérité* de *Jacques Cartier.* Un écrivain moderne, M. Cunat, dément formellement au contraire cette opinion ; voici de quelle manière il s'explique. Après avoir parlé du brillant mariage de *Cartier,* il ajoute : *Mais de cette union,* " *si heureuse sous bien des rapports, il ne devait naître aucun* " *enfant, et Jacques Cartier eut le regret de n'avoir pour* " *porter le nom qu'il illustra, que des collatéraux.*" (2)

Voilà qui est sans replique. J'ajouterai qu'en dressant la généalogie de l'illustre navigateur, j'ai vainement cherché sous toutes les formes possibles *l'acte de décès de la dite ou du dit Hervée Cartier à la date du 9 janvier* 1665, et que je n'ai absolument rien trouvé de semblable. Mais ceci ne peut servir de preuve, car l'Abbé Manet possédait peut-être des documents qui me sont entièrement inconnus. La tradition, cette science supérieure à toute histoire humaine quelque complète qu'elle soit, condamne également l'opinion du savant abbé. Sans aller si loin cependant, et, en ayant recours aux dates, nous allons pouvoir acquérir la certitude ; *ou que Jacques Cartier n'avait pas d'enfants, ou qu'ils moururent en bas âge.*

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(1) *Biographie des Malouins Célèbres. Hommes de mer et de guerre,* p. 40.—St. Malo—Rotier, Imprimeur, 1824.

(2) *St. Malo illustré par ses Marins p.* 60. *Rennes* 1857.

Nous voyons en effet, dans nos archives municipales, sous la date du 14 *Janvier* 1588, des lettres de Henri III; en vertu des quelles, *pour reconnoistre les services rendus à l'Etat par Jacques Cartier, leur oncle*, sa majesté daigna accorder aux sieurs *Chatton de la Jaunais* et *Jacques Noüel cappitaines de navires et maistres pillotes de Saint-Malo, le commerce exclusif du Canada pendant deux ans dans ce pays, et pour l'exploitation des mines découvertes ou à découvrir le droit d'y transporter chaque année soixante criminels, tant hommes que femmes.*" (1)

Or, *Jacques Cartier* né *le* 31 *décembre* 1494, avait *cinquante-six ans* en 1550, en le faisant mourir en 1555, c'est à dire à l'âge de soixante et un ans, (ce qui est de bonne heure); *nous atteignons donc l'année* 1555. Et les lettres d'Henri III sont données à ses neveux Olivier Chatton et Jacques Noüel en 1588, c'est à dire 33 *ans après l'année où nous supposons que Cartier mourut.* Si Cartier avait eu des enfants, comment supposer qu'Henri III ne les eût pas récompensés de préférence à ses neveux, puisqu'il *voulait reconnaître les services rendus à l'etat par le célèbre navigateur, en la personne de ses descendants*? Comment croire en outre qu'une génération entière puisse s'éteindre dans une période d'à peine trente-trois années? Je conclus donc, avec M. Cunat et plusieurs autres auteurs contemporains: *ou que Jacques Cartier n'eut pas d'enfants, ou qu'ils moururent en bas âge.*

J'arrive maintenant à la seconde question:

Quelle fut l'année de la mort de Jacques Cartier, et où a-t-il passé de vie à trépas?

Le dernier acte authentique de l'illustre navigateur est celui que nous offrons à la Société; c'est-à-dire *l'acte de baptême du fils de Jacques Noël et de Robine Hervé*, dans lequel *Jacques Cartier* figure comme parrain, avec ses titres: *et nommé fust par noble homme Jacques Cartier.* Cet acte porte la date du 5 *février* 1550. Depuis cette époque nous ne trouvons dans nos archives aucune preuve de la présence du célèbre navigateur en nos murs. C'est ce qu'exprime parfaitement encore M. Manet, lorsqu'il dit: "*Du reste, on ne sait si ce fut dans sa Ville natale que*

(1) Archives de la Mairie de Saint-Malo. Carton Cartier, No. 7.

Cartier finit ses jours. Ce qu'il y a de certain, c'est que nos registres ne font aucune mention de sa mort.

Je le crois sans peine, car, suivant certains indices, il ne mourut point à Saint-Malo, mais en *sa terre de Limoilou* : ce qui est fort probable. En effet n'avons-nous pas vu qu'il avait fixé sa demeure dans cette terre seigneuriale et qu'il ne venait qu'accidentellement à Saint-Malo ? (Voir pages précédentes). S'il est mort dans son manoir de Limoilou, l'acte de décès aura été levé, soit par un chapelain particulier attaché à sa personne ou à sa demeure, ou bien par un prêtre appelé à la hâte de la petite paroisse de *Saint-Coulomb*. (1)

Telle est l'opinion qui m'a semblé la plus probable.

C'est en ce sens que j'ai fait plusieurs voyages à *Saint-Coulomb*, pour interroger le pasteur actuel sur l'état des registres de cette paroisse. Il m'a conduit à un jeune homme, chargé de l'éducation des enfants de cette commune et gardien des petites archives du village. Ce jeune homme

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(1) *Saint Coulomb* village de 1500 âmes à deux lieues de Saint-Malo, sur la route de Cancale, d'une origine fort ancienne, puisque vers 1026, suivant certains titres originaux, Seigneur Bertrand du Guesclin acheta la souveraineté de Saint Coulomb.

La terre de Limoilou, érigée en seigneurie par François 1er, pour le célèbre navigateur, était depuis fort longtemps déja dans la famille Cartier. Car le savant Ogée écrit dans son remarquable article sur Saint Coulomb : " En 1500, " on voyait dans le même territoire les maisons de Bouais, " du Cartier, de la Ville-Galbrun, du Vieux-Chatel, de la " Fosse-Ingant, etc., etc."

Je pourrais affirmer d'un autre côté que la terre de Limoilou resta en la possession des descendants de Jacques Cartier. Car je vois que, pendant la Ligue, un sieur de Limoilou nommé *Pierre Jolly*, prit part à l'insurrection du château de Saint-Malo. Ce qu'il y a de certain, c'est que, si les descendants de Jacques Cartier se défirent de la terre partrimoniale de leur ancêtres, ils n'en habitèrent pas moins la commune de Saint-Coulomb, comme je l'ai démontré dans la généalogie de Jacques Cartier (recours à la généalogie).

s'est empressé de se rendre à mes désirs, et m'a communiqué un ancien manuscrit en parchemin, fort difficile à lire, contenant une liste des plus bizarres et des plus incomplètes *des deux mille premiers décès de la paroisse, depuis sa fondation.* Je n'ai encore rien découvert dans ce registre relativement à *Jacques Cartier*, mais j'ai l'espoir d'y trouver l'acte de son décès, jusqu'à ce jour complètement inconnu, et, si mes recherches et mes travaux sont couronnés de succès, d'en faire part immédiatement à la Société Historique et Littéraire du Canada, avant de les envoyer à d'autres revues.

C. Desmazières de Séchelles.

St. Malo 1er Mai 1861.

ARRÊT de la cour de Saint-Malo, en date à Saint-Malo du 18 *mars* 1533, *portant défense expresse à tous les armateurs de cette ville, de faire sortir du port aucun navires pour Terre-Neuve, avant que ceux de Jacques Cartier ne soient équipés et pourvus de "maistres mariniers et compagnons de mer.*

"Sur la remontrance, complainte et doléance faite à "cette cour, de Maistre *Jacques Cartier, Capitaine et* "*Pilote pour le Roy*, ayant charge de voyager et aller aux "Terres-Neuves, avec deux navires équipés de soixante "compagnons pour l'an présent: que, combien que lui "avait été délivrée partie des dits navires pour faire la "dite navigation, laquelle ne se peut faire sans avoir "des mariniers et compagnons de mer, lesquels ne peut "trouver pour être pris et loués pour faire la dite navigation, "étant l'empêchement que lui ont donné et donnent jour-"nellement aucuns, tachants empêcher la dite navigation, "contrevenant au plaisir et vouloir du Roy nostre souve-"rain Seigneur, et plusieurs bourgeois et marchands de "cette ville tachant à emmener et conduire plusieurs navires "de cette dite ville aux dites parties de Terre-Neuve pour "leur profit particulier, demandant et requérant pour cela, "être sommairement pourvu de remède de justice con-"venable."

" Pourquoy, après avoir été de ce que dessus sommaire-
" ment informé, a été et est donné pouvoir et autorité
" commission et mandement spécial aux sergents généraux
" de cette dite cour, et à chacun, de faire à l'instance et
" requête du dit Cartier, et au dit nom de l'autorité de
" la dite cour, arrêt sur tous et chacun des navires des
" port et hâvre et de toute la jurisdiction, avec prohiber
" et défendre à tous et chacun des bourgeois et maîtres de
" navires, de non les faire déplacer de ce dit port et hâvre
" de cette ville, des lieux de là où ils sont, et de non les
" faire voïager jusques à ce que tout premier les dits deux
" navires du dit Cartier et du dit nom soient duement
" équipés de maîtres mariniers et compagnons de mer, en
" suivant le bon plaisir et vouloir du dit seigneur."

" Fait par la cour de Saint-Malo, le XXVIIIe jour de
" mars l'an quinze cent trente-trois, et baillé pour faire
" savoir aux personnes dont particulièrement serez requis
" de la part du dit Cartier, et aussi si mestier est, à son de
" trompe et cri public par cette dite ville par les carrefours
" accoutumés à faire exploits, cannies et cris publics."

Copie textuelle de l'ordonnance délivrée par le roi François 1er., au Sénéchal de Rennes, en date au château de Fontainebleau du 12 *décembre* 1540, *par laquelle, le roi requiert information sur les obstacles qui ont retardé Jacques Cartier de lever le nombre de pilotes et autres maistres expérimentés, nécessaire pour son expédition aux terres de Canada, Hochelaga et Saguenay.*

François par la grâce de Dieu, Roy de France, au Sénéchal de Rennes ou son lieutenant et alloué du dit lieu : Salut et dilection.

" Notre très-cher et bien amé *Jacques Cartier, Capitaine*
" *Général et Maistre Pillote de tous les navires et autres*
" *vaisseaux de mer* que nous voulons envoyer ès terre de
" Canada, Hochelaga, jusqu'en Saguenay, faisant un des

" bouts de l'Asie, du côté du nord, nous a fait dire et,
" remontrer que pour l'expédition de la dite enterprise,
" lui est besoin et nécessaire recouvrer grand nombre de
" pilotes mariniers et autres maîtres dument expérimentés
" au fait de navigation, pour la conduite des dits navires.
" A laquelle fin, il a voulu convenir et accorder avec
" plusieur experts du dit état et marine ; lesquels ont été,
" par aucuns de nos sujets, tant de la ville de Saint-Malo
" que autres villes, ports, et hâvres du duché de Bretagne,
" dissuadés d'entreprendre le dit voïage, requérant le dit
" Cartier sur ce notre provision à ce convenable. Pour
" ce est il, que nous, ce considéré, nous mandons et com-
" mettons par ces présentes, et chacun de vous sur ce
" requis, que informiez diligemment sur les dits empêche-
" ments, pour la dite information faite et rapportée par
" devant notre Conseil Privé, être ordonné ce que de
" raison."

" Donné à Fontaine-belle-eau (Fontainebleau) le douzième
" jour de décembre de l'an quinze cent quarante, et de
" notre règne le vingt-sixième."

" Ainsy signé par le Roy en son conseil : De la Chesnaye,
" et scellé du scel de cire jaune."

The Belief of the Ancient Egyptians respecting a Future State.—*By the Reverend J. Douglas.*

[Read before the Society, 15th May, 1862.]

The Egyptians were the most religious of the historical nations of antiquity, possessing a better claim to that epithet than the mere practice of a gorgeous ritual (in which alone, however, most ancient religions consisted) could bestow. A deep reverential awe towards an unseen but overruling Power pervaded their national feelings, and gave its impress to their national institutions: a firm belief in a future state was not only held as an article of religious faith but permitted to exert an influence over their lives; and the alliance between religion and ethics was so far recognized and enforced, that upright conduct, not wisdom or noble descent, was considered to afford the only claim to esteem in the world, and the only passport to the "land of the West." In this, as in all other respects they differed from the Greeks, in whose mind there was ever a vague reverence for something, but who were religious only in so far

as religion could be made subservient to poetry and art; and from the Romans, who patronized religion as a political engine, but never looked upon morals as an essential element in it.

Egyptian mythology, likewise, was throughout purer than those of Europe. The gods of the first order were deifications of the various productive principles of nature; the second order consisted of their offspring; while the central deity of the third—Osiris—was the divine representative of pure goodness; who, as his legends relate, though a god at first, came on earth, was slain by Typho, the evil being, only to reassume his divine functions as "Lord of the West," and judge of the dead in the Hall of Amente. In this capacity he was worshipped with the members of his family throughout Egypt, and was in fact the only deity to whom universal reverence was paid. In all the temples his name is found with those of the local triad; and certain of his mysteries were necessarily celebrated everywhere, being associated with death. It is with these, and the belief which they indicate that we have partly to deal, and they will best illustrate the moral character of Egyptian mythology.

No little obscurity still hangs over the precise belief of the Egyptians respecting a future state,

nor need we wonder that it should be so. It would be impossible to gather a clear and definite idea of the supposed condition of the soul after death, from either Grecian or Buddhist mythology. The attempt to reduce religious knowledge, still more, dim religious intuitions, to logical formulæ has seldom succeeded, and was probably unattempted by the Egyptians. The fragments of their sacred books which have reached us, add less than might have been expected, to our real acquaintance with their mythological system, as they generally contain little else than mystical apostrophe to the Deity. Whenever they were able, however, to represent a doctrine pictorially, it is done graphically and intelligibly. Their employment of hieroglyphical symbols in writing had made them such masters of the art of pictorial description that it may be doubted, whether any people has ever attained the power of depicting facts as vividly as they.

From the sculptures and paintings on their temple walls and tombs, as well as from many notices in their ritual, it is evident that they regarded the future life as a state of retribution, and looked forward to a judgment before the god Osiris, to which all must be subjected, ere they could be admitted to a participation in the divine

nature. But while the soul was undergoing this ordeal in the invisible world, the body passed through a similar trial, previous to its burial; and the scene transacted by the priests on the banks of their sacred lake bore some resemblance to that thought to be taking place in the presence of Osiris. After the embalmment had been completed, and the tomb prepared, the body, accompanied by the relations and a band of hired mourners, was drawn to the borders of the sacred lake, of which there was one in every *nome* or province. "There," according to Diodorus, "forty-two judges having been assembled and placed in a semicircle, near the banks of the lake, a boat was brought up, provided expressly for the occasion, under a boatman, called in the Egyptian language Charon. When the boat was ready for the reception of the coffin, it was lawful for any person who thought proper to bring forward his accusation against the deceased. If it could be proved that he had led an evil life, the judges declared accordingly, and the body was deprived of the accustomed sepulture; but if the accuser failed to establish what he had advanced, he was subjected to the heaviest penalties. When there was no accuser or when the accusation had been disproved, the relations ceased from their lamentations and pronounced encomiums on the deceased. They did not enlarge upon his descent, as is usual

among the Greeks, for they held that all Egyptians were equally noble (*an explanation which can be hardly correct, as the system of castes was firmly established in Egypt from the earliest times*) ; but they related his early education and the course of his studies : and then praising his piety and justice in manhood, his temperance and the other virtues he possessed, they supplicated the Gods to receive him as a companion of the pious. This announcement was received by the assembled multitude with acclamations, and they joined in extolling the glory of the deceased, who was about to remain forever with the virtuous in the regions of Hades. The body was then taken up by those who had family catacombs prepared, and placed in the repository allotted to it."

Not only had the remains of the lowest to undergo this public trial,—those even of monarchs were exposed to the judgment of their people. Nor was it in their case any more than in that of others an empty show, which always terminated in the acquittal of their memory from all blame ; as there is reason to think, from the erasure of their names from the catacombs which they had excavated for themselves during life, that the bodies of more than one Pharaoh never obtained burial. The sentence however, seems not in all instances, to have been irrevocable ; for upon their rejection, those who were able to possess the cases in which mummies

were placed, while still in the house before burial, restored them to these, till expiation had been made for their sins by sacrifice and the donation of money to the priests:—but the poor were probably at once buried on the shores of the lake, where traces of extensive cemeteries are still found.

The ignominy of such a public refusal of the right of burial must have exerted a beneficial restraint throughout life; but such a prudential motive did not suggest the institution of the trial. It more probably originated in the reverence which the Egyptians felt towards the body as the seat of life, and its supposed participation therefore in the sin of the soul. A connection, however, was believed still to subsist after death, between the disembodied spirit and its former tenement; and in this belief we find the strongest reasons, not only for their posthumous judgment of the body, but for the care with which they endeavoured to preserve it from decay; for the expense which they went to, not only in adorning its resting place, but in storing it with the necessaries of life, and the objects in which the deceased took pleasure; and for the correspondence in several points between the judgment of the body on earth and that of the soul before Osiris in the Hall of Amente.

The judgment of Osiris was often represented on the lids of mummy cases; on the walls of the Temples and Tombs; and in the "Book of the

Dead"—the only one of the sacred Book or Books of Hermes, which has yet been discovered and read. The largest and most complete of those on the monuments is in the side Adytum of the Ptolemaic Temple of Dayr el Medineh—a small Temple devoted to funereal rights and situated in a desolate valley behind the plain of Thebes. The scene occupies the whole of one wall, being fourteen feet long by eight feet high.* The deceased is being ushered into the "Hall of the Two Truths" by the Goddess Thmei in her double capacity as divine representative of Truth and Justice. In his right hand he holds an ostrich feather—her symbol—in token of self-justification, and raises the other in an attitude of supplication, while he pleads his innocence of any grievous sin. Thmei's office in the lower world was "Keeper of the Gates of Truth," not as exercising herself the capacity of Judge,—but as excluding all falsehood and injustice. Her attributes, therefore, belong peculiarly to Osiris and the other judges who all wear them, the former on either side of his Pschent or Crown, the latter like Thmei herself—on the head.

In front of the deceased stands a balance, one

* This description was illustrated by paper casts of this very judgment scene; which was made by pressing damped paper, containing but little sizing, upon the sculptured wall of the temple, and allowing it to remain attached till quite dry. When removed the whole subject was so distinctly impressed that every hieroglyph could be clearly traced, even on its arrival here.

of whose scales contains a jar holding his heart, (it being considered the seat of the affections, and therefore the source of virtue and vice,) the other an ostrich feather, the emblem again of Thmei. The weighing of his actions is superintended by Horus the hawk-headed divinity, and Anubis the jackal-headed—the one the conductor of the dead into Amente, the other their accuser. Of the result the forty-two figures, (who occupy two lines along the whole top of the scene,) each the avenger of a separate sin, are with Osiris the judges. This result is recorded on a papyrus roll by Thoth, the god of letters and the scribe of the other world. The roll when full is given to Osiris who thereupon pronounces sentence. The gate of the mansion of Osiris is guarded by Cerberus, an ugly monster with glaring eyes and open mouth; but before it sits, in the crook of Osiris, the emblem of dominion, Harpocrates his son. He was so called by the Greeks through a mistaken notion of the meaning of an attitude in which he is often represented, viz; with his finger to his lips: an attitude never significant of silence but always of youth,—and given therefore to the offspring, whether of gods or men. This being his attribute, the position which he occupies at the gate of the mansion of Osiris indicates the correct belief of the Egyptians as to the nature of dissolution, which is not death but a new life, a restoration to eternal youth, a resuscitation and not annihilation.

On a lotus bud, springing from the throne of Osiris, are the four genii of Amente, in the form of the four jars in which were preserved *viscera* of the deceased. These genii were probably only subordinate forms of Osiris, whose name they bear; but they always appear with the heads of the four principal deities of the lower regions, AMSET with the head of Osiris a human head, either male or female; HAPI with the head of Thoth, a monkey's head, which he wore as well as that of the ibis, which characterises him as god of letters; SMAUTF with the head of Anubis, the jackal's head; and KEBHSEN with the head of Horus, a hawk's head. To them was committed the care of the *viscera* of the dead. These, in high class mummies, were embalmed separately, and placed in stone jars, sometimes of the most costly alabaster, whose lids where sculptured with the heads of the genii. The jars were buried with the mummy in the tomb. Where such expense could not be afforded by the friends of the dead, imitation jars but solid, made of pottery or wood, were substituted: and inside the mummies of the poorest class, into which the *viscera* were replaced, there are found little figures of the genii cast in wax or pottery.

Between the genii and Osiris, a panther's skin is suspended in mid air, emblematic probably of

the sanctity of the Deity; as a panther's skin is always worn by the priests of the higher orders.

The forty-two judges, termed by Wilkinson the *Assessors*, are always represented with human bodies and different heads, though the variation is not in all cases the same. Generally the first had the head of a hawk, the second of a man, the third of a hare, the fourth of a hippopotamus, the fifth of a man, the sixth of a hawk, the seventh of a fox, the eighth of a man, the ninth of a ram, the tenth of a snake, and so forth in obedience to a rule which we do not understand, as the order is by no means invariable.

The forty-two sins specially recognized by the moral code of the Egyptians, and of which the deceased must prove himself innocent before Osiris and his assessors, are enumerated in the "Book of the Dead," and with the speech which introduces them, supposed to be addressed to the judges, affords us one of the most interesting results of hieroglyphical study. The passage has been read by Birch, and is introduced into Bunsen's "Eygpt's Place in Universal History," (Vol. IV. 644.) It abounds with allusions whose meaning is by no means clear, and is a striking example of the strange confusion of ethics and ritualism, which was sure to result from their confused knowledge of right and wrong :—

"Oh, ye Lords of Truth!—Oh, thou great God, Lord of Truth! I have come to thee, my Lord, I have brought myself to see thy blessing—I have known thy name, I have known the names of the forty-two of the gods who are with thee in the Hall of the Two Truths, living by catching the wicked; fed off their blood; the day of avenging words, before the good Being, the justified.—Placer of spirits, Lord of Truth, is thy name.

"Oh, ye Lords of Truth! let me know ye.—I have brought ye truth. Rub ye away my faults."

Then commences his self-justification in general terms, which he concludes by appealing to each of the assessors as follows:

1.—I have not been idle.
2.—I have not way-laid.
3.—I have not boasted.
4.—I have not stolen.
5.—I have not smitten men privily.
6.—I have not counterfeited rings or measures.
7—I have not played the hypocrite.
8.—I have not stolen the things of the gods.
9.—I have not told falsehoods.
10.—I have not spared eating bread.
11.—I have not caused (*any*) to weep.
12—I have not rejected.
13.—I have not been idle.
14.—I have not eaten the heart.
15.—I have not plundered.
16.—I have not killed sacred beasts. (*A crime punishable in Egypt by death*).
17.—I have not made conspiracies.
18.—I have not robbed the streams.
19.—I have not listened.

20.—I have not let my mouth wander.
21.—I have not taken a tittle of things.
22.—I have not corrupted the wife of another.
23.—I have not polluted myself.
24.—I have not caused fear.
25.—I have not plundered. (*The same was made to a different Deity in number* 15.)
26.—I have not burned my mouth.
27.—I have not been inattentive to the words of truth.
28.—I have not blasphemed.
29.—I have not put forth my arm.
30.—I have not made delays or dawdled.
31.—I have not hastened my heart.
32.—I have not clipped the skins of the sacred beasts.
33.—I have not multiplied words in speaking.
34.—I have not lied or done any wicked sin.
35.—I have not reviled the face of the king or of my father.
36.—I have not defiled the river.
37.—I have not made loud words.
38.—I have not blasphemed a God.
39.—I have not injured the Gods, or calumniated the slave to his master.
40.—I have not laid plans, I have not made his account, I have not ordered.
41.—I have not augmented plans, I have not taken the clothes of the dead.
42.—I have not despised a God in my heart, or to his face, or in things.

What a marvelous commingling of the frivolous and important, of the spiritual and grossly material, of right and wrong: what a picture of paganism with its mass of falsehood and its few grains of truth! Yet, with-all, how much more

ennobling must this worship of Osiris have been than any form which that of the powers of nature ever took: for it, at least, recognizes something beneath the external coating of things in both man and nature—that there is a great all-presiding Spirit,—a Lord,—a Judge,—a Father,—and that man is more than his mere creature, and therefore related to him by other ties than bind all things else to him; and it asserts throughout man's moral responsibility.

While, however, still clinging to self-righteousness as a ground of justification, the soul yet trusts to the mercy of Osiris, in his character of Father, for the forgiveness of sin, as constantly recurring allusions in the ritual evince; and at length forces itself into the presence of its Father, despite the restraint of nature and the evil God, *Sut* or sin.

The following extract seems to indicate some such belief or expectation :—

"O Soul, greatest of created Beings, let me come, having seen and passed; having passed the gate to see my Father Osiris, I am his beloved; I have come to see my Father Osiris. I slay the heart of *Sut*. I do the things of my Father Osiris. I have opened every door in heaven and earth. I am his beloved son. I have come from the dead an instructed spirit. Oh, every God and Goddess! I have come along."

The expression, "I have come from the dead an instructed spirit," refers probably to the belief in metempsychosis—the second great article of

their creed, respecting a future state. Yet it is uncertain what particular form of this variously modified doctrine they hold; or whether their ideas respecting it were not so vague and contradictory as to render it impossible to reduce them to a systematic article. Pherecydes and his pupil Pythagoras, borrowed it from the Egyptians, but may have taught it in an altered shape. Plato, likewise, enunciates the same doctrine in the Phaedro; and it is admitted by all the Grecian and Roman historians, who wrote of Egypt, to have been the universal belief there, and to have been thence introduced into Greece. According to Herodotus, (II. 23) "the Egyptians were the first to maintain that the soul of man is immortal, and that after the death of the body, it always enters into that of an animal, which is then born; but when it has passed through all those of the earth, and the sea and the air, it enters the body of a man and is born again, which circuit it accomplishes in 3000 years." Plato may have combined the original Egyptian notion, with the poetical idea of Pindar, when he fixes the duration of the cycle of necessity at 10,000, except in the case of those "who have philosophised sincerely, and together with philosophy, have loved beautiful forms. These indeed, if they have thrice chosen this mode of life in succession, shall in the three thousandth year, fly away to their pristine abode,"

(*a metaphor borrowed from the Egyptian emblem of the soul, a bird with outstretched wings and human heart.*)

But before the doctrine had passed through the imaginative minds of the Greeks and been moulded to suit their fanciful systems, it had doubtless, so far lost its Egyptian character, as to be a most unreliable guide in arriving at a correct opinion of its primitive form. The references also, to the wandering of the soul, which occur in such Papyri as have been read, shed but a dim light upon it; if indeed, they do not increase the confusion by compelling us to abandon many of the feasible explanations, which we had before framed of our mere scanty materials: while the mystical sculptures which cover the walls, pillars and roofs of the tombs and probably in most cases refer to this cardinal article of belief, are quite unintelligible. Yet the very obscurity which shrouded it and the scope therefore which it offered to fancy, gave it a deeper hold on the convictions of the people, and thus heightened the influence which it exerted in their habits and customs. To it may be traced their animal worship; for how could they otherwise than hold sacred or at least respect the life of an animal in which the soul of an ancestor

might at that moment be residing *: and it probably impressed on their architecture that character of massive durability which so prominently distinguishes it; for they must naturally have aimed at erecting buildings which should have undergone no change, when they returned to inhabit them or worship in them at the expiry of their wanderings.

But when we come to enquire what place the judgment holds in the sequence of these events, and when the justified soul was supposed to be absorbed into the Deity and become Osiris, we are left in the same uncertainty in which they probably found themselves. That the condemned soul was doomed to pass through the bodies of unclean animals, whose habits resembled its propensities when on earth—and that therefore the doctrine posssed a judicial character,—seems to be established by an interesting scene on the tomb of Ramises V, where the soul of one, banished from the presence of Osiris, is being conveyed away in a boat by two monkey-headed divinities, under the form of a swine. But yet even the justified appear to have been obliged to undergo a certain number of migrations—perhaps after the formal judgment, or more probably after a

* It may be thought that the reverence paid already to animals suggested the doctrine of metempsychosis. Till better acquainted with the early development of the mythology, all speculation is little better than guess-work.

tacit judgment of their own consciences—as a purgatorial process, preparatory to their final admission to the abode of Osiris :—with this difference however, that they may have had the privilege of choosing such forms as they wished to assume. This view rests however on debateable grounds,—being unsupported by other evidence than the contents of a Papyrus, read in 1852 by M. de Rougé and published in the Revue Archéologique. It is a Novel, the plot of which is founded on this very doctrine, the hero being, during the important period of the narrative, a wandering spirit, and the machinery a strange intermixture of the natural and supernatural. It was written contemporaneously with the Books of Moses, and certain parts of its contents and style should occupy a foremost place among the evidences for the authenticity of these records. The state of society which it describes is precisely that which we should imagine it, from the narrative of Moses, to have been during Israel's sojourn there ; and the style much resembles that of the Pentateuch, being concise, epigrammatic, and abounding in repetition.

The nature of the composition renders it doubtful, how far it may be relied on as explanatory of the popular belief: for in ancient and modern literature there have been many strange stories told of what no one believes. Yet it is improbable that

the only romance of that far distant period upon which we happen to have lighted should be an exception to the general rule.

It narrates the mysterious spirit-life of a soul, which yet holds intercourse with earth through a material body; its wrongs, and its revenge, by means of metempsychosis. To attain this object it assumes in succession the forms of a sacred bull and a *perseas* tree, but at length returns to that of a man; when it succeeds in wreaking the vengeance which it sought to bring down upon its victim.

Egyptian records, however, further teach us that after all these dark and [illegible] soul passes through [illegible] and at length and fo[illegible]

The ardent longin[illegible] of displays were the offspring of a [illegible] faction with this life, and an asp[illegible] the knowledge and attainment of anothe[illegible] midst, therefore, of all the absurdities which [illegible] misguided imagination created, may we not trace unconscious prophecies of that clear revelation of life and immortality, which God has mercifully made to us in the Gospel of Jesus Christ?